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ORIGINAL ARTICLES

THE PROGNOSIS OF ANGINA PECTORIS.*

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The exercise of the art of prognosis is the most difficult function of the physician. Beside the personal equation of the physician and of the patient, which cannot be expressed in mathematical terms, every aspect of disease must be considered; its etiology, its pathologic physiology and anatomy, its symptomatology, its normal and abnormal course, its exact diagnosis and, finally, its treatment. Our medical forefathers paid more attention to prognosis than is done at the present time, partly because Hippocrates wrote three books upon the subject which were studied, commented upon and discussed for at least two thousand years as authorities; partly because this made it a highly important branch of medicine, and partly because there was much less known in medicine than at the present day. Certain it is that, while the older physicians were very accurate observers of symptoms, their mode of prognostication could hardly be considered worthy of emulation.

When we consider how difficult the prognosis is in angina pectoris, we are not astonished to find contradictory and insufficient statements made by our medical forefathers. My teacher, Alonzo Clark, says in his quaint way that angina pectoris "is pretty plainly a neuralgia," that "hysterical angina is very rare," and that "these neurotic anginas are nearly as dangerous as those of organic origin." Niemeyer (1874), whose book was so much read and admired in this country, states that "only those cases have any chance of cure in which the trouble is a pure neurosis without organic changes." Austin Flint (1873), who was an excellent observer, makes a more detailed statement. He says:

> The prognosis is always grave if physical signs show the existence of serious cardiac lesions; and sudden death is to be expected if there be much aortic regurgitation, or the habitual weakness of the heart render probable fatty degeneration or impaired nutrition of the organ.

* Read (by invitation) before the Chicago Medical Society, Feb. 23, 1910.

While this shows that Flint had looked deeply into the subject, study of the contemporaneous literature will prove that he was an exception, and that the general conception of the disease did not include the various causes of angina pectoris, and always considered it fatal.

The most distinguished exception to this attitude was William Stokes (1855), who first described angina pectoris in obesity of the heart and first proclaimed the fact that angina pectoris is not a disease, but a symptom. The latter is universally accepted now, the various causes of the syndrome are fairly well known, and any attempt to study the prognosis must consider these. For causation the following classification may be found useful:[1]

I. ORGANIC CAUSES. II. FUNCTIONAL CAUSES.

Under the first heading are found: 1. Disease in the coronary arteries, the aortic valve and the aorta itself. 2. Diseases of the myocardium. 3. Diseases of the pericardium. Under the second heading are found: 1. The toxic form. 2. The angioneurotic form, and, 3, the neurotic form. It is more than likely that, as our knowledge of the subject increases, other causes may be found which cannot be detected at present.

In order to study the subject I have collected the suitable cases seen by me in fourteen years in private practice, the number being 121. These "suitable cases" are such which I have been able to follow, or which are still under observation; all others have been disregarded. Both the advantages and disadvantages of selecting this material are evident. The principal advantage of studying private instead of hospital or dispensary patients lies in the fact that in every way they can be more easily followed up. Whoever has tried to keep dispensary or hospital patients under observation in a chronic disease will agree with me as to its difficulty. On the other hand, it is especially in private patients who belong to the better classes that, in chronic cases, the prognosis is more favorable than in the lower classes. But, for self-evident reasons, in the severe cases of angina pectoris this does not seem to be the case, while it holds good for the milder cases.

In common with all other observers, I find that angina pectoris is more common in the male than in the female, in the ratio of 63 to 48. This apparently differs materially from all other statistical statements, but is easily explained by the fact that we are now considering the presence of the syndrome in general. The youngest patient was 29 years old, the oldest 76. Romberg[2] states that coronary sclerosis occurs occasionally as early as the 24th year. The longest duration of the recurring syndrome was 17 years, the shortest in three who died in the first attack.

Consideration of the various forms of angina pectoris shows the following: In coronary sclerosis there were 56 cases in all; i. e., 29 cases without other appreciable changes in the heart and 27 with other changes. It is proper to state here what evidences I have considered as

1. Forchheimer, F.: Angina Pectoris, The Old Dominion Jour. of Med. and Surg., No. 6, December, 1909.
2. Lehrbuch d. Khtn. d. Herzens u. d. Blutgefasse.

pointing to coronary sclerosis. They are the existence of angina pectoris and certain changes in the aorta or the aortic valve. In the aorta we find evidence of sclerosis, sometimes dilation, which is now easily demonstrated by ortho-percussion and the orthodiagraph. Most frequently a soft aortic systolic bruit is detected, which sets in a little after systole, most commonly combined with an accentuation of the second aortic sound, especially characteristic when the blood pressure is low. Over the aortic area are found systolic bruits, differing much in character, sometimes soft, sometimes harsh, but as a rule unlike those of aortic sclerosis due to other causes. Moreover, the second aortic sound is accentuated, which is a fairly reliable differential sign between arteriosclerotic changes in the valve and the ordinary form of aortic stenosis. In one case of syphilitic endarteritis there existed angina pectoris of a very severe type, the physical evidence of a mitral lesion and of myocardiac insufficiency.

In the 27 mixed cases which were developed upon other diseases, the before-mentioned signs were present. The coexisting diseases were as follows: Chronic myocarditis in 12; mitral lesion in 6; aortic lesions in 4; obesity of the heart in 4; alcohol, diabetes, chronic nephritis, of each, 2; syphilis and cirrhosis of the liver, 1. Nearly all of these had evidences of arterioscleroses.

In the cases of angina in which coronary sclerosis alone existed we find three dead in the first attack and seven others dead. Of the latter, two died of diabetic complications, one of complicating pneumonia in the status anginosus, death being due to acute cardiac dilatation, one of a cerebral and another of a gastric hemorrhage. So that, in all, in only six cases could death be attributed to the coronary sclerosis. The duration of the disease in these cases varied from 16 months to seventeen years, and all were males. Indeed, in the 29 cases of coronary sclerosis there is but one female, which corroborates the statements made by all the authors who have written upon the subject, approximating that of Osler, who has seen only one woman in 40 cases of angina pectoris. The reason for this apparent immunity in the female sex in this series of cases is readily found; the kind of material in which the women have very little cause to develop this form of disease. The prognosis of this form has been variously stated; from dubious, serious, grave, to "nearly always fatal" (Huchard). In general, it depends upon the following. The question of sex has already been referred to; that occupation is most favorable in which there is least physical and mental wear. The same may be said for the habits and the entourage. Excessive use of tobacco and alcohol should be especially considered. Syphilis makes for an unfavorable prognosis when it is inveterate. General or localized arteriosclerosis affects the prognosis more or less, as it interferes with other functional activity. Otherwise it does not influence the prognosis. Cases in which the onset is marked by a very severe attack, with or without cardiac asthma, present an unfavorable prognosis, especially when the attack is a prolonged one. Unfortunately, in this form, a mild beginning does not always signify a mild continuance.

As attacks are produced by constriction or obstruction of the coronary artery, or its branches, if there were any mode of determining the degree

of constriction, its character and its localization, much would be gained. When the obstruction is due to thrombosis or embolism, the attack is usually fatal, either immediately or later on, as the result of changes in the myocardium. The attack is always immediately fatal when one coronary artery is closed. This has been shown both by pathologic investigation as well as by animal experimentation (Porter). As a rule death occurs instantaneously where the descending or circumflex branches are completely closed, but occasionally the patient survives for a few days, as is shown by myocardial infarcts found post-mortem (Romberg). Incomplete obstruction may at first produce violent attacks, which are followed by severer attacks due to greater diminution in the lumen of the vessel, or this lumen may become wider and the attacks milder. Small obstruction is usually followed by mild attacks, which, according to changes in the mycocardium, either become milder or more frequent. Where there is arteriosclerosis of the aorta or aneurysmal dilatation with angina pectoris, the prognosis becomes unusually grave, although in three of my patients the duration of the disease was two years in one, three years in another, and in the third over four years. He is still comparatively comfortable and able to attend to his vocation. In the first one rupture of an aneurysm in the ascending portion of the aorta caused death; the other died in a severe attack of angina. In this form the changes in the myocardium due to coronary sclerosis are of the utmost importance for prognosis. My experience leads me to believe that when both cardiac asthma and angina pectoris are present from the onset, the outlook for improvement is very small. The strength of the heart, whether due to functional properties or to the presence of anatomic changes, is one of the predetermining factors in the prognosis.

But I cannot agree with Neubürger,[3] who states that in coronary sclerosis there are three stages of myocardial changes, which always develop and which are always fatal.

It has been frequently stated that when the blood pressure is high the prognosis is better than when it is low. From what has been mentioned this can be accepted. But it is not due to the fact that high blood pressure is more amenable to treatment, but because in pure coronary sclerosis low blood pressure usually signifies a weak myocardium. Moreover, high blood pressure may indicate serious complications and, as far as the duration of the disease is concerned, it usually implies increased work for the heart and early myocardial insufficiency. In twelve of the cases in which blood pressure could be studied it was normal in one case, low in seven and increased in four.

As far as the duration of the disease is concerned, my cases give little definite knowledge, as so many of them are still alive. Aside from those who died in the first attack, in eight the disease lasted from 1 to 2 years; in four from 2 to 4 years, and in one for 17 years. Of those alive, four have had the disease from 8 to 10 years, the same number from 5 to 8 years, and ten from 4 to 5 years.

3. Der Zusammenhang d. Stenose d. Koronar-arterien d. Herzens mit der Erkrankung seiner Muskulatur., Deutsch. med. Wchnschr., 1901, No. 24.

The proper treatment of these cases is a very important prognostic factor; by this I refer to the prevention of the attacks, the treatment during the attack and that in the interval which is both causal and symptomatic.

The question has been frequently answered whether these patients ever get well. Most commonly it is answered in an indefinite way; even Huchard admits that coronary sclerosis only is "nearly always fatal." The answer to the question depends upon our definition of what is meant by getting well. If complete removal of the cause is necessary to consider the patient well, it is more than likely that a very small number gets well, provided the diagnosis is made early and proper treatment is applied. If disappearance of attacks only is looked upon as a mark of recovery, the number is greater; again when recognized early and properly treated. But even then it is very small; certainly in my cases, as there are only three in which the attacks have ceased entirely, the minimum time being two years.

The mixed forms of coronary sclerosis are most conveniently discussed under the heading of myocardial affections, although in the case of valvular disease, which eventually leads to myocardial insufficiency, angina pectoris may be present as the dominant symptom, and in some forms no evidences of permanent myocardial insufficiency may be noticed. With this in view we now consider the diseases of the myocardium, the second of the organic causes.

The prognosis of angina pectoris in acute myocarditis, as we see it occasionally in diphtheria, gonorrhea and rheumatic fever, can hardly be estimated. It is probably the result of the same afferent nerve impulse, which accounts for its existence in all other forms, and, from a study of a subject which is still developing, it seems to me one is justified in concluding that angina *per se* does not lead to a fatal issue here. The cause which produces the angina and the damage produced by it are paramount in this form of disease in so far as prognosis is concerned.

In chronic myocarditis the conditions are as follows: In uncomplicated cases, of which there are twenty-two, with two deaths, the following may be noted: The attacks were mild or rudimentary in the majority of cases, i. e., in 18 and normal in 4 cases. In the latter class one patient, a brewer, may possibly be excluded, as the disease was only of 18 months' duration, and he died of pulmonary edema after great physical exertion. On the other hand, all physical evidences of coronary sclerosis were absent, yet coronary sclerosis may have existed. In the other cases with characteristic attacks, complete relief was given for the angina for from two to seven years; they are attending to their vocations and are comfortable. So that there are left three cases in which it would seem as if characteristic attacks of angina pectoris occur in chronic myocarditis. The symptom, then, in this disease presents a favorable prognosis. Indeed, it seems to be readily controlled by proper medication when there is no myocardial insufficiency of the first or even the second degree. On the other hand, when it appears with chronic myocardial insufficiency, it is quite serious, as there were two deaths in eight cases. With the setting in of severe symptoms of myocardial insufficiency the attacks of

angina pectoris became more violent, cardiac asthma developed in one instance, and the disease ran its fatal course in a comparatively short time. When there is marked coronary sclerosis combined with chronic myocarditis, the prognosis is still worse, two deaths in six cases. This is readily explained by considering the effects produced upon an already diseased myocardium, by interfering with its blood supply and the probability of degenerative changes in the heart muscle. It has been quite interesting to note the blood pressure in the cases just referred to. In most of the uncomplicated cases it was normal or low. In one case, a man aged 61 years, it did not even exceed 160. Where there was chronic myocardial insufficiency the blood pressure was also low; even the presence of a renal complication in one case did not raise the blood pressure, as usually occurs. In the few cases of coronary sclerosis in chronic myocarditis there was nothing which could be called characteristic. Before depending upon blood pressure as a diagnostic or prognostic sign, especially in those conditions that are produced by multiple lesions, it is necessary to consider all of these, as well as to determine how and where abnormal blood pressure may be produced. Even then a number of cases may be found in which it is impossible to determine why there is abnormal pressure; although the blood pressure may have been taken frequently and in varying conditions, postures and surroundings.

In valvular disease with failure of compensation, of which there are nine cases, the prognosis of angina pectoris is very difficult. The greater number of these was found in aortic insufficiency, because aortic insufficiency in and of itself leads to arteriosclerosis, as is stated by most modern authors. In these the attacks were more violent, as a rule, than in mitral disease.

There are many prognostic factors here which must be considered. The return of the attack, whether mild or severe, counts for much. The presence or absence of coronary sclerosis is of enormous importance. The condition of the myocardium is, probably, the most important factor for prognostication. In aortic valvular disease the condition of the aorta should also be carefully studied. When the myocardial insufficiency is in its earliest stages, the prognosis is better than when it is in its later states. When angina pectoris is present without coronary sclerosis the chances are best, and in the first instance it may disappear for years, to reappear as soon as the myocardium fails again or, as is not uncommonly the case, when arteriosclerosis develops. Certain it is that in chronic valvular disease we find both the mildest and the severest forms of angina pectoris.

In syphilis of the heart, as is stated for all syphilitic lesions of the heart, the prognosis is usually good, provided the nature of the disease is recognized and promptly as well as thoroughly treated. The one case in which there was angina pectoris was not an exception to this rule. In this instance the patient has been perfectly well of his angina for eight years, the mitral insufficiency which had developed about the same time still persisting.

There are twenty-two cases of obesity of the heart, of which six were males and sixteen females. This statement is altogether at variance with

the one which I made as the result of a larger statistical research published in 1888, comprising 122 cases,[4] of which 88 were males and 34 females. In this series, besides a large number collected from the literature, I included especially employees of breweries, in whom I found a satisfactory number of cases. In the present statement of cases, not only the material has been changed, but the fact that we are looking only to angina pectoris must be considered. In obesity or fatty overgrowth of the heart, angina pectoris is a very interesting subject, principally because the authors differ so widely in regard to its etiology and, therefore, as to prognosis as well. Two views are expressed, the one that it is due, principally, if not altogether, to coronary sclerosis; the other that it is produced by the condition of the heart. In the older series 51 cases are noted, whose post-mortem lesions might be productive of angina pectoris, i. e., 42 per cent. In the present series only six cases are found with coronary sclerosis, i. e., 23 per cent. The explanation of the different result is easily explained by considering the different ages of the patients in both series; in the older one 82 per cent. were over 40 years of age; in the present we have only 7 per cent. This evidence alone would tend to show that the angina pectoris in obesity of the heart can be produced, and is produced in the majority of cases, not by coronary sclerosis, but by ischemic conditions of the heart muscle. The prognosis of angina pectoris in this condition is made upon this basis; where there is coronary sclerosis it is the same as has been stated before. When coronary sclerosis is not present, prognosis depends principally upon the myocardium. When the mass of the heart is so great that it cannot be adequately supplied with blood when the patient is at rest, i. e., chronic myocardial insufficiency of the last degree, the prognosis is bad. While I have seen a patient die in this form of angina pectoris, this is not common; indeed, in this instance there was cardiac asthma.

In the great majority of these cases the attacks are diminutive; of the sixteen only two had characteristic violent attacks. Aside from the previous consideration and the age, the principal prognostic factor is proper treatment; out of the sixteen cases six were cured and ten were relieved. Among the ten not completely relieved we find those who could not or would not continue the treatment a sufficiently long time and three in whom the treatment could not be carried out because there were complications, as diabetes or asthma, which made it impossible. The two cases which were described *in extenso* in the article before referred to, lived for twenty and twenty-three years, respectively, entirely free from angina. I have seen several cases in which the patient was cured for a longer time. It would lengthen the discussion unnecessarily if I were to give the histories of all of them, but, on account of its unusual interest, I cannot refrain from giving an abstract of one. It is that of a woman who came under my observation twenty-four years ago. She was then 30 years old, in very good circumstances, weighed 290 pounds, and complained of cardiac symptoms, including angina pectoris, due to obesity of the heart and, what is much rarer, that after having borne one child eight years

4. Trans. Assn. of Am. Physicians, 1888, Vol. III.

ago she was now sterile. After her weight was reduced nearly ninety pounds her cardiac symptoms appeared and she gave birth to a boy, who is now 20 years old. What with taking care of this boy, who was a neurotic offspring of a neurotic mother, and an unusual amount of exercise she did not gain in weight, but six years after the birth of her son she again came with the former complaints, again was reduced in weight, and after a more prolonged treatment again her symptoms disappeared, and she had another child who now is 14 years old. Shortly after this, as so frequently happens with us, her husband lost his fortune and she had not only to take full charge of her children, but had to turn to housekeeping, even doing menial work. Since that time she has not gained in weight, remaining stationary at 190 pounds, she is perfectly well, but she has had no more children.

The arteriosclerotic heart has been considered in connection with coronary sclerosis, and its prognosis depends, as in other forms of chronic myocardial involvement, largely upon the combined effects of the two conditions.

In interstitial nephritis and in diabetes mellitus the prognosis depends upon the same factors described in connection with coronary sclerosis, due allowance in the first disease should be made for the condition of the myocardium, the blood pressure being a good index in this disease and in diabetes for the general condition of the patient.

The anginal pains with oppression that occur in acute pericarditis are not dangerous. The same seems to be the case in obliterative pericarditis.

The functional anginas have been classified under the heading of the toxic, the vasomotor forms and neurotic angina. In the toxic form my experience has been practically limited to cases due to nicotine poisoning. They vary from the mildest type to the severest. I have seen a large number of these cases, 21 recorded, and in every instance the attacks ceased when tobacco was given up. With the light thrown upon the subject by experimental research on the effects of nicotine upon the coronary arteries, this seems strange, possibly explained in that the human heart reacts differently to nicotine than does that of the lower animals. This assumption is certainly warranted when we consider the differences that exist in the microscopic findings in men and in animals. But upon one thing we all can agree, viz.: that when nicotine poisoning is superimposed upon a coronary sclerosis, angina is rapidly made worse.

In vasomotor angina, as first described by Nothnagel,[5] we probably have an organic disease, in which the vasomotor symptoms result from arteriosclerosis. Indeed, Neusser[6] believes that all forms of angina pectoris are due to spasmodic contraction of the coronary blood vessels and goes so far as to state that when they get well it is due to rigidity of the diseased blood vessels. There is only one case of this form of angina in the list, and he had the characteristic evidences of coronary sclerosis as well. He has obtained great relief from treatment, but has been under obser-

5. Deutsch. Arch. f. klin. Med., iii, 309.
6. Ausgewählte Kapitel Klinischen Symptomatologie d. u. Diagnostik, Heft. 2, Wien, 1904.

vation for two years only, so that it would be injudicious to draw conclusions.

The neurotic form must be considered as being due either to neurasthenia, to hysteria or, as is frequently the case, to a combination of both. In neurasthenia, in which we also find peripheral angiospastic conditions, the prognosis is good *quoad vitam*, not always good, however, as to complete restoration to health. The duration may be short or it may last for years; indeed, it may never disappear. In the latter we have the clinical picture of a chronic neurasthenic who, in this instance, lives controlled by cardiophobia, the condition of his pulse and the fear of an attack of angina pectoris. But there is one other aspect which should not be disregarded. Neurasthenics not only are frequently arteriosclerotics, but they may develop arteriosclerosis on account of excessive wear and tear of blood vessels. So that patients in whom there already is angina pectoris become worse when neurasthenia develops, which is very common, and neurotic angina may finally lead to coronary angina. The latter occurred in one of my patients who has been under my observation for fifteen years. In the last three years all the evidences of coronary angina have developed. The attacks themselves may be rudimentary or fully developed. In another place (l. c.) I have recorded the case of a neurasthenic physician who had a characteristic attack of angina pectoris in the consultation room to which we had adjourned after seeing a patient with cardiac disease. Complete rest cured the doctor.

In hysterical angina pectoris we find rudimentary and normal attacks. I have seen a house epidemic of hysterical angina, following the death of the father of the family; every one of the hysterical children had angina. As it is six years since the occurrence took place, and all of them have had no recurrence, it must have been of psychogenous origin. It was very interesting to note that Kleefeld in 1824 recorded an epidemic in Danzig and Gélineau, one upon a ship at St. Helena in 1858.[7]

Patients do not die of hysterical angina, but the condition may recur and lead to the same results as in neurasthenic angina.

DISCUSSION ON THE PAPER OF DR. FREDERICK FORCHHEIMER

Dr. Frank Billings of Chicago:—We are fortunate in having one to discuss this imporant subject whose long experience, thorough methods of examination, profound consideration of all subjects and who brings to bear a sound judicial opinion upon all things with which he deals. I have known Dr. Forchheimer for about a quarter of a century and have always been impressed with the painstaking care and the great insight with which he views all subjects.

It is with some diffidence that I rise to discuss the subject which has been considered by this master. I believe that I can best meet the condition imposed upon me by giving in as brief a manner as possible some of my own experience upon this painful disease. In looking over my histories I find that during the past twelve years, which includes the time since we have been accustomed to use a tonometer, I have 90 records of patients who have suffered from unmistakable symptoms of angina pectoris. Of these, 11 were women and 79 men. The ages of the women averaged greater than that of the men and ranged from 54 years to 69; or, in other words, there were 4 in the fifth and 7 in the sixth decennium. Of the men

7. Friedreich: Virchow's Handbuch. d. Speziellen Pathologie u. Therapie, Vol. 1, u. p 826.

the youngest was 43 and the oldest 83. There were 10 in the fourth, 29 in the fifth, 34 in the sixth, 5 in the seventh and 1 in the eighth decennium.

As to related morbid conditions, all of the women suffered from recognizable myocarditis and arteriosclerosis and 5 showed chronic nephritis as evinced by albumin and casts. One woman suffered from glycosuria of a chronic form. One woman suffered from dilatation of the transverse arch of the aorta. Of the 79 men, 68 showed evidences of myocarditis; 64 arteriosclerosis and 42 of chronic nephritis. Four suffered from glycosuria. Dilatation of the transverse arch of the aorta was manifested in 5 of the men; aneurism in 2; a small aneurism of the left coronary artery existed in 1; left coronary thrombosis occurred in 4 and one patient suffered from chronic acetanilid poisoning as a related cause.

Of the 79 men 13 are known to be living, 23 are known to be dead, and the remainder have been lost sight of. Of the 11 women 6 are known to be dead and 5 are known to be living. Of the living the duration of the disease varies from 4 years to 15. One man of 68 years whose first symptoms were manifested in 1896, still is living with much less severe attacks than he had ten years ago. Of the dead, 1 man suffered for 14 years; another for 12 and others for lesser periods. The mode of death in 9 was sudden, almost instantaneous; 3 died while asleep; 1 died at the end of 48 hours from the beginning of the first attack of a severe angina coincident with a thrombosis of the left coronary artery which resulted in softening of the walls of the left ventricle; 5 died with broken heart compensation and general anasarca, the angina disappearing after broken heart compensation occurred. One man, aged 69 years, who had suffered with severe attacks for 5 years off and on, became so improved by treatment at Nauheim that he passed through a severe pneumonia without the heart giving way. Blood pressure was studied in the great majority of the patients. The highest was that of a man who suffered from syphilitic arteriosclerosis and myocarditis and interstitial nephritis and at its greatest height was 270 mm. Another patient suffering from chronic Bright's with a blood pressure of 240, when under the treatment of a quack who had him on starvation treatment anginal symptoms developed with a blood pressure of 190 mm. On the average the women had higher blood pressure than the men. The lowest in any woman examined was 160 mm. and the highest 175 mm. The lowest pressure of the men was 60 to 70 mm. and the highest, as stated, was 270 mm.; the average ranging between 120 and 185. As noticed by practically all observers there seemed to be two types of patients as far as the arterial conditions were concerned. That is, those with cardiovascular changes usually had a nephritis and a rather high arterial tension, and the other class less numerous with cardiac changes with less apparent involvement of the arterial system; usually none of the kidneys and with a pressure ranging from 100 to 120. It was also noticed that in those with relatively high arterial tension, there occurred cycles in which the arterial tension was raised from 12 to 24 hours preceding the anginal attack. When this rise of arterial tension occurred there was in some no subjective preliminary manifestation of the attack.

One also could divide the patients into two classes of the major and minor forms. The major forms were those in which the attacks were very severe associated with the characteristic constricted feeling of the chest, poststernal pain of a severe type, pain radiating into the neck, into the shoulders, arms and sometimes to the wrists associated with a sense of impending evil; the patient involuntarily standing like a statue breathing superficially, the skin pale, the face and hands often covered with a cold sweat and the pulse small, tense, rapid and sometimes irregular. In these attacks patients sometimes died suddenly.

The minor attacks usually occurred with a sense of fulness and weight in the epigastrium which extended to the poststernal region sometimes amounting to pain but usually to a sense of oppression with air hunger. The patients usually ascribed this to indigestion; often would take remedies to cause eructations of gas and be improved for the time. These attacks, too, usually would come on after a hearty meal with exercise after it and were naturally ascribed to indigestion. In others the minor attack would be manifested by a pain somewhere else; in two,

a mother and a son, in a tooth; in another patient in the left wrist and in another by pain in the suprasternal notch; in another by pain in the epigastrium. But in all of these minor cases sooner or later, as observed, the symptoms grew worse and finally became established as an ordinary attack of angina pectoris. As to the prognosis I confess there has appeared to me to be no palpable condition which I could grasp which would enable me to say that this patient would live for a long period of time or that that one would suddenly die. I have felt that in those patients in whom the breast pang would come when the patient was quiet; that is, sitting or even lying in bed in the night, were more likely to die suddenly than those whose attacks were brought on by either physical or emotional disturbances. As a rule the duration of life in the women has been better than that of the men. The prognosis may also be based partly on the management. If one may thoroughly command a patient and especially if he will follow a proper hygiene as to diet, graduated exercise, rest, etc., he will improve. The treatment at Nauheim by baths and the resistance movements has benefited the most of the patients I have sent there. So, too, have the Nauheim resistance movements when carried on at home in a proper way been of benefit. I think there can be no question that the toxic effect of tobacco when smoked very much increases the risk of the anginal attacks and, therefore, makes a poor prognosis. In some instances I have known the anginal attacks to disappear entirely on the cessation of the use of tobacco. Alcohol in moderation has not appeared to be as harmful, and indeed, when there is a tendency to vascular spasm, alcohol is a good remedy. The diet must, of course, be suited to each individual but as a rule should consist of a minimum amount of animal food with greater freedom in the use of vegetables, fruits, cereals, etc. Fat-making food should be cut to a minimum. With a high arterial tension coffee and tea should be omitted. The amount of fluid also should be regulated to meet the anatomic condition of the heart, vascular system and kidneys.

With the Wassermann test or the modification of it as made by Noguchi, much good, I believe, may be secured after a positive test by the use of mercury followed by the iodids in doses to suit the individual. In other patients I never have secured the benefit from the iodids as others have done as indicated by the literature. In other patients who suffer from cardiovascular spasm the nitrites are of undoubted value. Nitroglycerin is very evanescent in its effect but harmless and, therefore, may be pushed freely. Nitrite of soda is more lasting in its effect, but as its effects are sometimes toxic it should be used with caution. Tetranitrate of erythrol in the dose of 1/8 to 1/2 grain every four hours has a more lasting effect than nitroglycerin and also is harmless. In those patients who have a low blood pressure and with little or no apparent cardiovascular spasm, the nitrites are of no value whatever during the attack. Where absolute quiet will not afford relief a small dose of morphina sulphas (1/8 to 1/4 grain) should be given hypodermatically.

A patient in an attack should be allowed to assume the position which he desires. This is never one of recumbency. To force a patient to lie down during an attack is dangerous.

CHRONIC COLITIS.*

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This paper is a clinical study of 600 cases of chronic colitis treated at French Lick Springs. These include cases of both *colica mucosa* and intestinal catarrh, in many instances the two conditions coexisting. Excluded are gastroenteritis, enterocolitis and all other conditions in which the colonic involvement seemed of second importance, as also the acute forms.

* Read (by invitation) before the Chicago Medical Society, Feb. 9, 1910.

Of the total number of cases reported, 48.9 per cent. were males and 51.1 per cent. females. Forty-one cases were under 20 years of age, the youngest 3; 52 were over 50, the oldest 78. The greatest number were between the ages of 30 and 40. The duration of the disease has varied from three months to twenty years, usually from two to six years. In 86 per cent. the symptoms first observed were those of a disturbance of digestive function. In some it was attributed to the stomach, more often to the intestinal tract, particularly the colon. Fifty-one per cent. gave a history of constipation, about two-thirds of which were of the spastic variety. In 15 per cent. constipation alternated with diarrhea, and in 27.2 per cent. diarrhea was present more or less constantly, the number of stools varying as a rule from two to five daily.

Mucus was present in all cases in appreciable amounts. In 36 per cent. it existed in the forms of casts or tenacious inspissated shreds, showing evidences of pressure and retention. In the remainder, it was found in the form of small flakes more or less mixed with the fecal deposit, or in gelatinous-like masses sometimes passed alone.

Colic was a prominent feature. In only 17 per cent. was this symptom apparently entirely absent. In 33 per cent. it was described as slight or moderate in degree and in the remainder as at times severe. A large majority of the cases showed evidences of distinct neurotic tendencies, sometimes of the most manifold nature, and autotoxic symptoms were exceedingly common.

Physical examination showed gastroptosis in 12 per cent. of the cases and enteroptosis in 23 per cent. The right kidney was palpable in 74 cases, the left alone in 9, and both kidneys in 24. Tenderness over the course of some portion of the colon was present in about 90 per cent. of the cases. Most commonly it was over the sigmoid flexure. Next in point of frequency was the *cecum* and then the transverse colon. Very often it included both the ascending and descending colon, and in about 15 per cent. it was quite general. Urinalyses showed indican in excess in 34 per cent. and urates in 27 per cent. Oxyluria was present in 19 per cent. and phosphaturia in 23.

Among the other symptoms observed general abdominal discomfort, gastric distention, eructations, burning, regurgitation, coated tongue and a bad taste were common symptoms; nausea less so. Cardiac palpitation, arrhythmia, intermittence of the pulse and precordial distress were often a source of much anxiety to the patient, as were also vertigo and unusual fatigue. Insomnia, migraine and general neuralgic pains still further added to their discomfort. Mental depression of some degree was a very constant feature, in some instances amounting almost to hypochondriasis. Many of these phenomena, I believe, were the result of autointoxication, as they usually disappeared or were much mitigated as soon as the disturbance of digestion was relieved. Of the influences that have appeared to act in an etiologic relation to the symptoms present, those which would be calculated to cause nervous and mental depression were decidedly more frequent than those which might act as mechanical or chemical irritants to the mucosa.

The diagnosis in typical cases of colitis is not difficult, although mistakes are common, and its significance is often overlooked, even when its existence is recognized. Many of these cases have come with a diagnosis of appendicitis or gall-stones, some of them postoperative, yet the symptoms present were the same as those which had existed from the beginning of the illness. I am confident that operations of this kind would be undertaken much less frequently if every case of colitis were properly treated from its incipiency, and that the results of these operations, where indicated, would be far better if more attention were given to the after-treatment of the colon.

Fecal examinations are an important part in the investigation of these cases, and in those reported such examinations have been the rule. Most frequently, they have been macroscopic only, but in a considerable number microscopic and chemical as well. Specimens are usually not hard to obtain, nor is it necessary always to employ a test diet or to continue the investigation over a prolonged period. What we most want to know is how the digestive function is being performed with the patient's ordinary diet, and with a little experience, fairly accurate conclusions may be drawn in this way. A very cursory inspection will suffice to determine the existence of mucus, its character and amount, the color and consistency of the stools, presence of intestinal sand, blood, worms and the grosser evidences of undigested food products. To form an accurate opinion of the digestive function, however, a microscopic examination should also be made, and in many cases it is desirable to employ a test diet, such as has been recommended by Schmidt. While attaching much importance to the results of examinations of this kind, I would also emphasize the point that the results, to be of practical value, must, as in all laboratory investigations, be considered in connection with the clinical history and physical signs. The most important thing to be searched for is the presence of mucus, which, if it exists in appreciable amount, is always abnormal and points either to an inflammatory or neurotic disturbance, very frequently, I believe, to both.

Among the various conditions complicating colitis, gastric disorders are decidedly the most common. In only 18 per cent. of the cases was there an absence of such symptoms, although generally they were comparatively slight. Gastritis was present in 13.3 per cent. and hyperchlorhydria in 24.1 per cent. Fourteen of these cases showed achylia gastrica. In many of the remaining cases no particular abnormality was apparent. Appendicitis was, or had been, present in 68 cases; in 24 it was postoperative. Symptoms of cholelithiasis existed in 32 cases, 7 of which had been operated on. Gouty manifestations were of very frequent occurrence, usually of atypical form. Cutaneous eruptions, such as eczema, urticaria, acne, psoriasis were comparatively common also.

It is difficult to outline briefly a treatment for so protean an affection as colitis, especially when we consider its various forms. Whether we take the view that the indications are to be sought solely from the side of the neurosis or that we should take some cognizance of the digestive symptoms, more than to stimulate intestinal peristalsis, one thing is

certain, and that is that we will not succeed by medication alone. I do not hesitate even to say that on the whole medicines are likely to do more harm than good. Here, as in other diseases, the important thing is a recognition of the influences that have caused it. If the case is brought to us at a time when the only evidences of the trouble are the presence of mucus and pain, plus certain neurotic disturbances, common to other functional neuroses, the treatment would not differ materially from that which would be applicable to neurasthenia without special intestinal involvement. Ordinary hygienic measures, such as fresh air, exercise, rest, baths, etc., are always applicable and if, as is generally the case, the nutrition is below par, we must see that the diet is sufficient in quantity to meet these requirements.

There is no scheme of diet that is applicable to all cases. If we can exclude any catarrhal condition, a course regimen, rich in cellulose, such as is recommended by von Noorden, will often succeed admirably, but the change should be made gradually and not abruptly. If pain is a prominent feature, if there is much tenderness over any part of the colon, great distention or marked evidences of undigested starch granules in the stools, it will only aggravate these symptoms. The best diet in the beginning is usually one that is easily digested and leaves a small residue. It may not relieve the constipation, but it will lessen the patient's discomfort. As improvement is observed in the secretory and sensory disturbances we can, by a diminution of proteids and the substitution of fats and carbohydrates, promote a better motor function. If diarrhea is present, only the blandest articles of food should be permitted.

In dealing with constipation, diarrhea and other attendant local phenomena, I believe that the milder mineral waters of the alkaline-saline group are among our most useful remedies. This opinion I have often heard expressed by physicians practicing in Carlsbad, Kissingen, Homburg and other European resorts where the waters are of this type. I have used the French Lick waters in all of the cases here reported, but I have not prescribed it in large quantities, nor have I relied wholly upon its internal use. The greatest benefit to be derived from its use is in its influence upon secretion. The management of all these cases requires the most careful supervision, and only the mildest course of the water is usually advisable in the beginning of the treatment. Very often, too, I have used in conjunction with this treatment warm olive oil enemata, taken at night.

Tonic baths, conjoined with local and general massage, have been largely used, both for their effect upon the circulation and for the relief of intestinal atony. Warm fomentations over the abdomen are very grateful if there is much pain or tenderness. The indications for abdominal massage are much the same as for the coarser forms of diet. Exercises, particularly such as bring into use the abdominal muscles, are most beneficial in promoting peristalsis. The greater the diversion and interest they afford, the better will be the results obtained. There are few conditions in which the psychical element enters more largely into causation than colica mucosa, and we are justified, I think, in availing

ourselves of the same influence in treatment. Optimism on the part of the physician and his ability to obtain the confidence of the patient count for much in the relief of mental depression, a common feature of these cases, and like influences are to be obtained from change of scene and cheerful surroundings.

The prognosis is, I believe, favorable in most cases, although improvement is often tedious.

FIBROMA UTERI (DESCRIPTION, BEHAVIOR, SYMPTOMS AND TREATMENT) IN THE NON-PREGNANT AND PREGNANT.

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The fibroma, fibroid, fibro-leio-myoma, or fibro-myoma of the uterus is a homologous, benign tumor of fibrous and smooth uterine muscle tissue, in varying proportions (somewhat like that of the normal uterine wall), in which the fibrous tissue usually predominates. Besides the fact that over 3 per cent. of the few fibromata examined microscopically have undergone sarcomatous degeneration and that carcinoma may occasionally develop from the inclusion of uterine glands within the fibroma, though it does not originate from it, there is also always the possibility of incarceration in the pelvis or if rising into the abdomen the attainment of very large size markedly interfering with nutrition, to say nothing of the pain, loss of rest and general interference with health, and the anemia from hemorrhage and infection, e. g., in the submucous variety. Also the possible nephritis and heart changes, the sterility, or, in case of pregnancy, the possibility of early abortion, or rapid growth of the tumor if pregnancy continues, as well as the liability to premature separation of the placenta during labor, prolongation of labor, temporary or permanent obstruction to labor, adherent placenta, postpartum hemorrhage, and infection deserve our most serious consideration.

In negresses and mulattos fibromata are often to be found at an early age and are considered by some authors as common in the dark races, in contradistinction to ovarian tumors and carcinomata which are said to be comparatively rare. In 11,203 white women examined for pelvic disease, fibromata were discovered in 4.3 per cent. (Moeller), and even higher percentages have been given by other authors. The date of the first beginning of a fibroma is nearly always obscure, as it at first often causes no symptoms, either in the non-pregnant or pregnant, till of a sufficient size, varying in different individuals. In the submucous variety small fibromata may cause only an increase in the monthly flow.

At autopsies fibromata are often accidental finds, having caused no symptoms in life. While Bayle estimated that 20 per cent. of all women autopsied at 32, and Klob that 40 per cent. of those autopsied at 50

years of age, have fibromata of the uterus, yet clinically only 1 per cent. of fibromata occur between 20 and 30, 28 per cent. between 30 and 40, and 51 per cent. between 40 and 50 years of age.

Etiology.—The fact that fibromata apparently only occur after puberty, and occasionally atrophy after the menopause, is suggestive of some close relation to ovulation and the child-bearing function of the uterus, especially the latter in which the pregnant uterus undergoes diffuse hypertrophy and hyperplasia in the first half of pregnancy, both intra-uterine, as well as (if to a less degree) extra-uterine. Fibromata might from their formation be considered as an atypic localized hyperplasia of the uterine wall, the exciting cause of which is unknown. Again, they are most frequent in the second half (thirtieth to forty-fifth year) of the reproductive period. Another peculiarity is that fibromata that were known to be present during pregnancy have in rare instances apparently disappeared after labor, presumably undergoing a process like postpartum involution. One such case was seen by the writer in a nullipara aged 35 years. The diagnosis was confirmed by laparotomy, but pregnancy being found to exist the tumor was allowed (for fear of causing abortion, it being the ardent desire of the woman to bear a child) to remain, the pregnancy continued to term and after involution could no longer be palpated per vagina. Lastly, clinical observation supports the belief that fibromata probably do not originate after and may grow slower or occasionally even cease growth, and in some cases even atrophy, at the termination of the reproductive period, i. e., at the climacteric or menopause. The simultaneous occurrence of fibroma and certain diseases of the ovary has been frequently observed and reported (Hegar). Ovarian irritation may cause an increased blood supply to the uterus and a probable increase in the size of fibromata.

Gottschalk described the intimate connection of fibromata with the uterine wall arterioles. Congestions probably favor the development of fibromata (Oleshausen), e. g., dependent congestion from constant sitting, congestions of ovulation, menstruation, coitus and pregnancy, congestion due to acute, subacute or chronic inflammatory excitants, e. g., endometritis, or peri- and para-metritis with secondary metritis. Clinically Oleshausen's idea appears to be well supported for fibroma patients are often well-nourished people of sedentary habits in which one would expect a very rich pelvic blood supply; yet this cannot be rightly considered more than a predisposing factor, the real cause, as in carcinoma, being unknown. The theory of Cohnheim is as prominent to-day as at its conception, despite the attempts to find a bacteriologic factor.

Fibromata were found in 515 private cases, while in the doubly large polyclinic practice only 283 (Schroeder). Engstrom found, in the virgin one, to four in the non-virginal, and Schroeder estimated the married fibroma patients at 78 per cent. and the unmarried at 22 per cent., and Fehling two married to every one unmarried.

Prolificacy appears usual in fibromata patients; 70 per cent. had borne children before the development of the tumor or at least before the diagnosis, the average being 3.2 children for each. Only 24 per cent. of the

married, mostly among the well-to-do patients, were sterile; doubtless their knowledge how to prevent conception or to cause early abortion played a part. This is not a large increase, considering that 8 to 15 per cent. of all married women are sterile anyway (Doederlein), or at least do not become pregnant, due to sterility of the male sex.

Macroscopically fibromata of the uterine corpus wall are usually multiple and show somewhat the same structure whether they be minute or large, and are often lobed and very irregular shaped and circumscribed more often than diffuse. The cut surface is white and hard if composed mostly of connective tissue, redder and softer if smooth muscle fiber is large in amount, or softer and whiter or whitish yellow locally or diffusely in some cases of degeneration.

Microscopically the fibroma consists of smooth muscle fibers and connective tissue irregularly arranged, often wavy and so close as to appear entirely fibrous, while in others the connective tissue may be looser, or in the so-called myomata the muscle fibers may predominate.

Fibromata are often divided from the healthy uterine wall musculature by a capsule of loose connective tissue out of which they can be easily shelled. Comparatively few small blood-vessels, as a rule, enter the tumor with the connective tissue trabeculæ. In other cases the fibroma, as well as the surrounding uterine wall, may contain cavernous (gravid uterus-sinus-like) spaces. About 91 per cent. of fibromata occur in the wall of the corpus uteri (especially on the posterior wall near the fundus) and only about 9 per cent. in the cervix uteri.

The Behavior of the Corpus Fibroma.—The corpus uteri fibromata are generally conceded to occur clinically most often within the tissues of the wall of the uterus, i. e., intramural or interstitial probably in about 65 per cent. of the cases, being at first only of very minute dimensions. As fibromata enlarge they may develop toward the peritoneum and gradually become subserous (24.3 per cent.) or they may develop toward the mucosa and become submucous (10.7 per cent.) (Winckel). Just what decides the position or direction of development is difficult to say. The site of origin being either near or actually under the peritoneum or near to or actually under the mucosa may be the deciding factor, or possibly development in the direction of least resistance. So long as the tumor remains surrounded by some normal uterine muscle, no matter how near it is to the peritoneum or how near to the mucosa, it is still technically intramural, though clinically one designates them as subperitoneal or submucous. Frequently fibromata are multiple, and all three types are represented in the uterine corpus, even though the whole tumor be small, but especially if the tumor is of large size, though occasionally there may be but one fibroma focus in a very large tumor.

1. The intramural or interstitial corpus fibromata in the non-pregnant uterus may remain intramural, i. e., entirely surrounded with a layer of normal uterine musculature and grow to large size before they extend beyond their intramural bed. They are usually more vascular than either the subserous or the submucous, and perhaps in consequence usually grow somewhat more rapidly. One occasionally finds in them

large venous-sinus-like hempseed to pea-size spaces (fibroma cavernosum of Virchow) often confined to a part of the tumor only, giving rise to a bruit synchronous with the woman's heart, simulating the so-called placental souffle of an advanced pregnancy. Cavernous fibromata may increase or decrease in size more or less rapidly according to the increase or decrease of the blood supply, probably also influenced by uterine muscular contraction. Hyperplasia rather than hypertrophy seems to be characteristic of the intramural tumor. Intramural tumor foci are usually multiple and usually present a lobed and very irregular or uneven tumor surface and may remain and become incarcerated in the pelvis or rise into the abdominal cavity. In a few cases there may be but one fibroma or, indeed, several intramural fibromata which may enlarge

Fig. 1.—Intramural or interstitial, (b) subperitoneal or subserous, (c) submucous fibromata obstructing the drainage, distorting the cavity and aspirating infectious material into the cavity, (d) the large sinus-like veins.

evenly, and rising out of the true pelvis into the abdominal cavity may closely simulate the pregnant uterus. The uterine cavity is usually lengthened and often so misshapen inside by the bulging tumors that the passage of the sound may be difficult or impossible. Intramural fibromata are hard, covered by a thicker or thinner layer of the softer uterine musculature.

At the climacteric the uterine walls themselves may atrophy and become flaccid and thin. Softening of one or more of the tumor foci can occur over a more or less wide area due to edema, myxomatous, fatty or cystic degeneration.

While intramural or interstitial corpus fibromata deep in the wall of the uterus might not hinder the occurrence of intra-uterine pregnancy,

those situated near the mucosa, as well as the actually submucous fibromata, might by the changes usually occurring in the endometrium, especially over the region of the tumor, naturally be considered as predisposing to sterility, both from the changed corpus mucosa being little adapted to the lodgment of the impregnated ovum, as well as due to the hemorrhage (menorr- and metrorrhagia) so common in these cases.

If pregnancy occurs in a uterus with intramural or deep submucous fibroma, as it often does without the tumor being diagnosed, abortion is liable to take place; but pregnancy may persist to near or full term, in which case the mucosa over the tumor often being thinned and having few or no glands and but little interglandular tissue there is very little substance for decidua formation. The chorionic villi are poorly developed, and the placenta is very thin over the tumor and thicker over the normal mucosa and must in consequence cover a wider area, to secure adequate circulation for the fetus. The poor circulation caused by the poorly developed placenta may be the cause of the death of the fetus in pregnancy in some of the cases frequently erroneously attributed to syphilis for want of a better diagnosis.

Placenta prævia may occur due to its increased diameter. During labor the fibromatous portion of the intramural fibromatous uterus not being able to contract (due to its poor development) as much as the non-fibromatous portion, premature (antepartum) separation of the placenta may result. The labor is also liable to be slow. Indeed, Pinard gives fibroma as a reason for some of the very slow labors in old primiparæ. If the intramural corpus fibroma be low down, the shape of the uterine cavity at term may be changed and malpresentations and prolapse of the cord or extremities can occur; indeed, if the tumor be very low in the corpus obstruction to labor can occur, or, if the low intramural fibroma be loose in its bed and near the mucosa, it may be dislodged and expelled and the child follow, or in higher myomata the child be born first and then the tumor.

Tumors have been expelled with the placenta still adherent to them. Adherent placenta is very liable to occur if it lies over the myomatous area, the villi in some cases even having penetrated the tumor itself, making manual removal of the placenta necessary, a fact that should always be borne in mind in adherent placenta. Portions of the membrane may also be adherent. Inversion of the fibromatous uterus may also occur. Postpartum hemorrhage due to the lack of power of the fibromatous portion of the uterus to retract well after expulsion of the placenta is common and sometimes fatal. Involution is slow; myomata may become necrotic and be expelled during the puerperium, a dangerous occurrence. Lochiometra and puerperal infection are common.

2. *The subperitoneal or subserous corpus fibroma* in the non-pregnant uterus lies immediately under the uterine peritoneum usually high up on the posterior, but may be anterior or lateral, i. e., intraligamentous or parametric. The direction of the growth of the subserous fibroma, if situated near the fundus, is usually much like the pregnant uterus upward into the abdominal cavity (unless retained in the pelvis by adhesions), elevating the uterus to which it is attached, often stretching and

thinning the cervix. Less frequently the uterus may be pressed downward and prolapsed by the tumor. Subserous fibromata are first attached to the uterus by a broad uterine attachment or a large pedicle composed of peritoneum and tumor tissue. In growing it may gradually separate more and more from the uterus till only a thin pedicle remains, sometimes so thin as to be composed only of the peritoneum and a few small blood-vessels. This thinning of the pedicle is seen in very small as well as large sized tumors. As a rule the larger the pedicle the better the blood supply to the tumor. The pedicle may become so thin that entire obliteration of the pedicle vessels may occur, when the vessels, especially of the omental adhesions, assisted by peritoneal adhesions, may continue to nourish the tumor. In other cases the inadequately nourished tumor may shrink in size; so-called spontaneous recovery. Subserous myomata are occasionally found lying detached in the pelvis and mummified, the cut surface free from blood and grey red (Doederlein). Torsion of fibroids with thin pedicles can occur the same as in ovarian tumors.

If the pedicle is sufficiently strong, torsion of the uterus itself at the cervix can occur and cause a hematometra or hydrometra. Indeed, in rare cases one finds both pedicle and uterus torsioned off. If the pedicle is thin, torsion may cause interference with the return venous circulation and result in adhesions and rapid enlargement of the tumor due to engorgement or intratumor hemorrhage, or if the entire circulation is cut off (unless nourished by the adhesion vessels) necrosis, ileus and death can occur. As many as 50 small and large subserous, intramural and submucous fibromata together have been reported in one uterus. The weight of a large fibromatous uterus in rare neglected cases may reach as much as 60 to 80 pounds. Descensus and incarceration of a pedunculated subserous fibroid in the small pelvis can occur.

Parametric intraligamentous or extraperitoneal fibroids, especially if growing from the side of the corpus, can develop between and spread the leaves of the broad ligament, invading the parametrium and pelvic connective tissue generally, as does the intraligamentous ovarian tumor. Pregnancy in a uterus with subperitoneal (subserous) fibromata of small size can occur. Small tumors are probably frequently present all through pregnancy and labor without being suspected. Larger subserous tumors may cause displacement of the uterus, stenosis or atresia of the Fallopian tubes and hindrance of the ascent of spermatozoa and sterility. If impregnation of the ovum does occur, it is conceivable that interference with a normal migration through the displaced or narrowed tubes and extra-uterine tubal pregnancy might result.

If intra-uterine pregnancy does occur in a fibromatous uterus (whether intra-mural or subperitoneal) the hypertrophy and hyperplasia of the pregnant uterus wall may take place unevenly, there being but little development of the part of the wall in which the tumor lies. The tumor may hold the developing pregnant uterus in retroflexion till it becomes incarcerated in the pelvis under the sacral promontory, especially if adhesions be present. Torsion of the pedicle of the fibroma (as preg-

nancy advances and the uterus enlarges) can occur if thin, or torsion of the whole pregnant uterus if thick.

In labor in rare cases the uterus may be held high up by adhesions and remain so even after labor is over, interfering with retraction and allowing grave or fatal postpartum hemorrhage. The tumor may fall down into the cul-de-sac of Douglas and arrest labor only temporarily if the pelvis be of full size, child's head small and tumor very small and readily undergoes softening and flattening, or if not too low it may

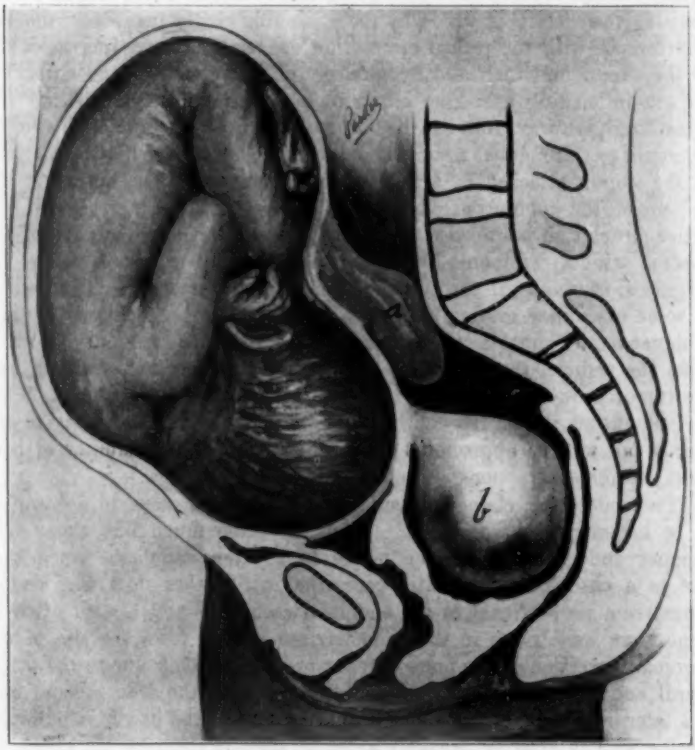

Fig. 2.—Fibromata "at term." The sessile fibroma (a) from the midcorpus might be retracted or perhaps displaced manually above the promontory. The pedunculated fibroma (b) hanging in Douglas' sac would, though very much smaller than in the picture, form an insurmountable obstacle to labor.

retract above the pelvic brim, or lastly it may remain in the pelvis and arrest labor permanently. It takes but a comparatively small-sized fibroma to make a permanent obstruction.

3. Submucous corpus fibromata (in the non-pregnant) lie immediately underneath the endometrium and may gradually protrude into the uterine cavity, and like the subserous are first sessile and later often pedunculated. Broad-based or sessile submucous tumors usually have a

good blood supply. The endometrium immediately over the fibroid may gradually become thinned, the glands may partially or wholly disappear till the tumor is partially or wholly devoid of mucosa, or, indeed, may become enucleated from its bed and cast out of the uterus or pedunculation can occur, the pedicle at first being thick and composed of uterine tissue. Gradually thinning and lengthening of the pedicle may occur and protrusion of the tumor through the internal os into and later through the cervix so that it may protrude from the external os or be entirely in the vagina, the tumor being still attached to the corpus by the pedicle, constriction of which by the encircling cervix may cause marked interference with the return circulation engorgement and increased size of the tumor and increased hemorrhage. In one case of the writer's a iv-para in making a sudden effort to save her child from falling felt something give way, followed by faintness, nausea and increased uterine hemorrhage. Bimanual examination revealed an almost fist-size fibroma in the vagina attached by a pedicle to the corpus. Constriction of the pedicle of the submucous fibroma by the cervix may increase till the entire circulation is impeded and necrosis and later decomposition of the fibroma with a carcinoma-like odor easily leading to a mistake in the diagnosis, especially if the patient be near the climacteric. The pedicle in some cases may gradually become so thin as to be composed of only submucosa and mucosa and but a few if any blood vessels. In other cases the pedicle, though only lead pencil thick, may not lengthen and the tumor grow to man's head size within the body of the uterus. That the submucous tumor frequently causes more or less hypertrophy of the uterus can well be appreciated when one thinks of the liability of constant uterine contractions and efforts to expel the tumor.

The endometric changes in submucous fibromata cases do not appear to be necessarily characteristic. They are often much like those of a fungous endometritis and the hemorrhage often simulates much that due to a chronic endometritis hemorrhagica, neither does the hemorrhage seem proportional to the endometric changes and is said often to come from some place in the endometrium remote from the site of the fibroma. Inversion of the non-pregnant uterus can occur due to the intramural and submucous tumors gradually thinning the true uterine wall and later as the tumor protrudes into the cavity of the uterus it pulls the uterine wall in after it, probably aided by uterine contractions acting on the tumor. The stronger and broader the pedicle the more liable is inversion said to occur, though both thin pedicled fibromata as well as sarcomata are said to have caused it. As the depression forms in the weakened wall on the inverted peritoneal side of the uterus intra-abdominal pressure now assists in rapidly increasing the inversion. In cases of a thinned or weakened place (e. g., the placental site) in the uterine wall and marked widening of the uterine cavity, e. g., after an abortion, immature, premature or term labor the intra-abdominal pressure may be possibly the sole factor in causing inversion at the previously weakened site.

In the non-puerperal uterus the inversion or intussusception uteri is divided into three degrees: (1) where the inverted fundus still lies above the os internum, (2) where the tumor and fundus protrude through the os internum and cervix and os externum and is free in the vagina with the constricting cervix around them as a band, (3) where both fundus and tumor protrude from the vaginal introitus (prolapsus uteri inversio). The encircling band of the constricting cervix usually remains. The weight of the tumor alone is said to seldom cause the cervix to invert, though traction with the volsellum may cause it to do so. The exposed endometrium over the inverted uterus and tumor is engorged, bluish, often thinned or even absent in places, especially if marked inflammatory changes be acquired. In milder cases there may be hyperplasia, the glands growing into the uterine musculature, the surface mucosa forming in folds, or even becoming polypoid. In long-standing cases the mucosa epithelium may even become squamous.

Pregnancy might be expected considering the hemorrhage to be less frequent in the uterus with a submucous fibroma, yet one frequently finds early pregnancy, or at least signs of its having existed in cases where it was little expected, as has been experienced many times microscopically in the Gynecologic Laboratory of Rush Medical College. The remarks already made under the heading of intramural fibroma in pregnancy also apply here.

4. The degenerations and other complications of fibromata of the uterus deserve our most careful consideration in the diagnosis, prognosis and treatment. Edema and softening can become so marked as to make the tumor feel cystic to touch, but puncture with the aspirating needle gives at most only a few drops of serous fluid. Cystic fibromata are due to the connective tissue spaces becoming filled with serum or the presence of cavernous lymphatic spaces (lymphangiectoides), in rare cases containing as much as 100 pounds of fluid simulating an ovarian cystoma. Hemangiectoides or dilated blood vessels in fibromata have been previously mentioned (see intramural). Hemorrhages can occur in the tissues of a solid tumor, or intramural or intracystic in cystic fibromata. Fatty degeneration also occurs much as in the normal puerperal involution; indeed, puerperal involution may occasionally occur after a case of concomitant pregnancy and fibroid in both puerperal uterus and tumor. This may occur to such an extent that only a pap filled capsule of the original tumor remains. A fibroma may even entirely disappear after labor is over (Hofmeier). Myxomatous degeneration can occur between the single lobes of the fibroid or between the bundles of one lobe. Calcification (uterine stone) especially in old women occasionally occurs in the subperitoneal and especially in small intramural tumors. The calcium carbonate and phosphate deposit probably most often occurs first in the middle of the tumor where the blood supply is poorest and fatty changes liable to be most marked. In rare cases the sawn surface can be polished. Sarcomatous degeneration of uterine fibromata occurs, according to Doederlein, in over 3 per cent. of uterine fibromata with a marked tendency to recur and form metastases. The sarcoma cut surface is

usually more even whitish yellow and softer than that of the benign fibroma. Every fibroma and its pedicle if pedunculated should be submitted to serial sectioning and microscopic examination, for frequently there are no macroscopic changes apparent in some even advanced cases of sarcomatous degeneration.

On the other hand, myxomatous or other softening may closely simulate sarcoma, and a bad prognosis given by error in such a case injures the reputation of the profession. Carcinoma from included uterine glands or a metastatic carcinoma from some other organ, e. g., the lungs,

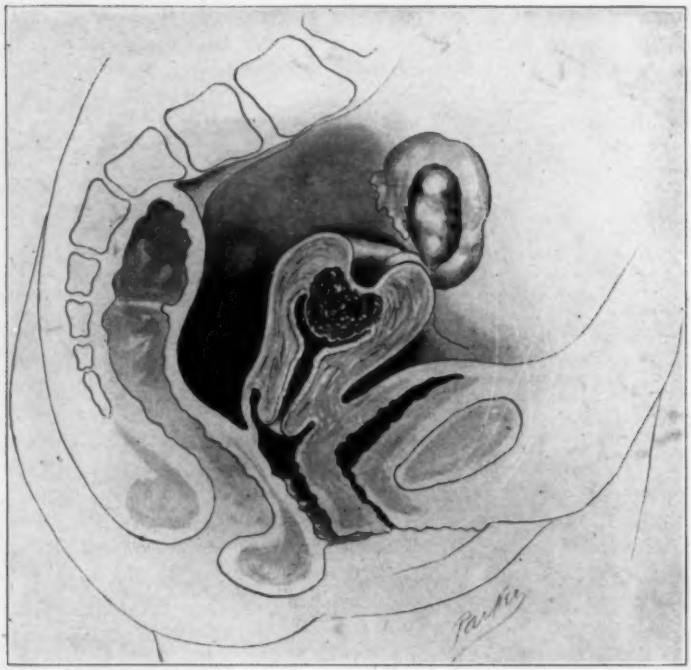

Fig. 3.—*Involution Uteri.* Intramural fibroma radually increasing in size and becoming submucous and dragging in the thinned uterine wall, aided by uterine contractions and intra-abdominal pressure.

can occur in a uterine fibroma or carcinoma by originating directly over the fibroid or in some other part of the uterine mucosa may invade a fibroid. Suppuration of uterine fibromata can occur by infection via the open cervix to the uterus or infection from adherent intestine or via the blood vessels. In the submucous fibroid the tumor often protrudes through the internal os and, indeed, the external os also and literally pumps infection into the uterus, often followed by infection of the tubes, pyosalpinx and pelvic peritonitis. Little by little the tumor may by trauma or poor blood supply undergo superficial infection, necrosis, ulceration and decomposition. Death occasionally occurs from sepsis

while the tumor is still present, or after spontaneous or operative enucleation, inflammation and suppuration of the bed of the tumor without or with thrombophlebitis of the large (sinus-like) uterine veins, phlegmasia alba dolens, embolism of the lungs and simple pulmonary infarct or abscess and death or sudden death from asphyxiation if the embolus be large. In the submucous tumor the constant hemorrhage, anemia and infection are especially to be thought of as inviting myocarditis and nephritis. Concomitant ovarial cystomata occurred in 1.5 per cent., ovarial embryomata in 1 per cent., carcinomata in 3.5 per cent., hydropyosalpinx in 8 per cent., ascites in 2 per cent., free intraperitoneal hemorrhage in 1.5 per cent., once from the large veins on the tumor and once from hematometra and passage backward of the blood through the tubes (Doederlein).

SYMPTOMS AND DIAGNOSIS.

Small fibroids are often entirely symptomless (subjectively) and are often only accidental finds during examination for some concomitant lesion, e. g., infection. In fibromata causing subjective symptoms these often differ less in the smaller subserous than in the intramural and submucous variety.

1. *The primarily intramural fibroma* in the non-pregnant uterus, if still too intramural to cause hemorrhage, may yet cause some dysmenorrhea due to the misshapen and stenosed uterine cavity giving rise sometimes to abortion-like pains due to uterine contractions to expel the accumulated menstrual blood. The intramural fibroma may as it grows gravitate, as it were, toward the peritoneal surface of the uterus or toward the endometrium; if toward the latter, hemorrhage may occur (menorrhagia gradually merging into a metrorrhagia) and the tumor may gradually become entirely submucous. Incarceration of the uterus and intramural tumor in the pelvis with pelvic pressure symptoms, e. g., constipation, sacral pain and pain also perhaps extending down the thighs. Later as it fills the pelvis, pressure on the iliac veins, varicose veins and even edema of the limbs may be the only symptoms in the purely intramural or those gravitating toward the peritoneum. In other cases, encroaching more on the bladder or situated in the anterior wall and pressing directly on the bladder are especially prone to cause dysuria, retention, ischuria paradoxica or complete incontinence. Ureter pressure, hydronephrosis and uremia are said to be more common in the flat pelves. All pelvic pressure symptoms of the incarcerated pelvic tumor are probably increased by the congestion during the menstrual period. The intramural tumor more usually rises out of the pelvis when the patient often experiences a cessation of the subjective disturbance at least for a time; indeed, the tumor may become of large size before interfering with nutrition due to increase of general intra-abdominal pressure by the hard fibroma. Later pendulous abdomen, diastasis recti (ascites if very large or malignant degeneration) and even hernia can occur. There is no rule; one patient seeks relief while the fibroma is quite small, complaining of marked pain due possibly to tumor capsule stretching, in another case the tumor is surprisingly large before any marked symp-

toms occur. By the vagina very small deeply intramural fibromata may be impossible to feel, while slightly larger tumors are sometimes appreciable as hard places in the uterine wall. Still larger intramural fibromata are felt as circumscribed growths or as a more diffuse hardening of an enlarged uterus. While fibromata usually have a characteristic fibroid hardness, the edematous, myxomatous, cystic or sarcomatous changes may cause it to be comparatively soft. Small fibromata in the anterior wall may increase an anteflexion, while larger fibromata in the anterior wall may push the uterus over in retroversion. If the tumor is on the posterior wall the increased weight is liable to cause a retroversion. The enlargements of the uterus due to gynatresia or pregnancy are usually recognized by the corpus being directly continuous with the cervix and of even shape and consistency. In pregnancy alone the uterus grows more rapidly and is flatter anteroposteriorly, and intermittent uterine contractions are present, while the intramural fibromatous non-pregnant uterus usually grows less rapidly and shows a marked irregularity as to shape and consistency and is usually harder to touch, especially over the tumor area, yet the soft diffuse intramural myoma may enlarge comparatively rapidly and so evenly that the bimanual signs may be much like those of an enlarging pregnant uterus rising out of the pelvis. In one case seen by the writer in consultation (where the patient's veracity as to amenorrhea was doubted) there had been a previous abdominal incision made for removal of the fibroma, but its appearance and consistency was so like the pregnant uterus that the abdomen was closed without removing the tumor. Ten months later the abdomen was again opened and the tumor and uterus removed. Even at the second operation on opening the abdomen the even diffuse development and even consistency was almost exactly like that of the pregnant uterus, and on palpation the hard spots deep in the wall closely simulated the fetal limbs. The guides of most service in this case were the displacement of the tubes and round ligament attachments, both on one side, and the length of time the tumor had existed. In all cases of pregnancy waiting will confirm the diagnosis by the development of the certain signs. The intrauterine sound should rarely be resorted to in fibromatous uteri; it may show the uterus cavity to be markedly lengthened, it is often too misshapen to admit of sounding only with difficulty, or, indeed, it may be impossible; the risk of infection is always great.

2. *The subserous fibromata of the non-pregnant uterus,* whether sessile or pedunculated, if small, may cause no symptoms beyond perhaps aiding in a malversion or malposition. If the uterus be retroverted or the pedunculated subserous tumor is adherent or retained in the true pelvis due to some other cause it may continue to grow till incarcerated in the pelvis and intrapelvic pressure may give the same intrapelvic pressure symptoms and sequelæ as mentioned in the symptoms of the intramural. Subserous fibromata, if non-adherent, more usually tend to rise into the abdominal cavity and draw the uterus upward. Symptoms may now cease till the tumor reaches very large size, perhaps as big as a 4- or 5-month pregnancy. Later very large subserous fibromata cause all

the intra-abdominal pressure symptoms the same as the intramural tumors. Torsion of the intra-abdominal pedunculated subperitoneal fibroma is less common than in the ovarian tumors, probably because the pedicle is usually more thick and rigid. Patients sometimes complain of the rolling around in the abdomen of the hard pedunculated fibroid.

The bimanual examination often succeeds in outlining both the uterus and the tumor and in the appreciation of their rigid connection. The volsellum attached to the cervix shows both uterus and tumor make a like excursion on making traction. While the subserous pedunculated fibroid is usually hard it may be edematous or partly cystic and soft like an ovarian tumor; again hard ovarian fibroids also occur. A cystic or edematous uterine fibroid attached to the uterine cornua by a slender pedicle may be very difficult to differentiate from an ovarian cystoma.

3. The submucous fibroid in the non-pregnant uterus, like the other varieties, does not usually occur alone. There are frequently intramural fibromata as well as subserous fibromata in the same case. I will only mention here those symptoms peculiar to the purely submucous variety. Hemorrhage from the mucosa, but not necessarily in proportion to the size of the tumor, which may be almost devoid of vessels itself and be partly or entirely denuded of mucosa. It may at first find expression either as a menorrhagia, i. e., increased flow often with increased pain at the regular period, or metrorrhagia a flow outside of the period, or both, often leading to extreme anemia. The flow is occasionally of a serosanguinolent character with exacerbations of violent hemorrhage. Abortion or labor-like pains may occur for months to expel a polypoid submucous fibroma gradually through the cervix into the vagina. Expulsion strangulation, necrosis and decomposition may set in with much decomposing carcinoma-like odor leading to a mistake in diagnosis, especially if the woman is near the climacteric. Again, a young woman with advanced carcinoma in the early thirties that had been diagnosed fibroid due to the hard carcinoma masses in the parametrium was recently referred to me in the Presbyterian Hospital.

Expulsion of the submucous fibroma is said to be especially liable during a period and has frequently been mistaken for a child's head. Inversion of the uterus may occur suddenly or by degrees. While one generally thinks of pedunculation and expulsion as being the rule, yet submucous fibroids often, though only having a lead-pencil-sized pedicle, may still remain entirely enclosed within the corpus uteri and grow to fetal or man's head size, giving rise to an evenly enlarged, *though characteristically round shaped,* uterus. The hemorrhage of fibroma may occasionally cease at the climacteric, though the menopause is often much delayed. The symptoms are often such that they do not permit one to consider the question of postponing the operation. The bimanual examination especially during a period often reveals a patent cervix through which the tumor is plainly felt, or, indeed, the tumor may protrude through the cervix into the vagina itself. The real difficulty in the latter case is to outline the cervix as a band encircling the tumor pedicle and to outline the corpus and fundus uteri. Especially should this be done to exclude

inversion so often associated with submucous tumor near the fundus. The symptoms of inversion of the fibromatous uterus may be few, especially at first, but the bloody discharge, which varies from slight to violent hemorrhages, is usually marked. The interference with the return circulation causes the swelling of the tumor and uterus to increase till the tightness of the constricting band may result in necrosis. Unless the tumor be large one can usually feel the cervical band. Bimanually one can occasionally appreciate with the outer hand (in thin people) a funnel-shaped depression where the fundus uterus should be. The sound will pass but a slight distance in inversion, but may pass to the fundus 7 c.cm. or more in simple polypoid fibroma. Great care should be taken to make this differentiation especially during the operation.

4. Symptons of Pregnancy and Fibroma.—Early pregnancy is often found to be present in cases where it was entirely unsuspected before the operation. Amenorrhea in a woman previously regular with a known subserous or deep intramural uterine tumor, and lessening of the hemorrhage, (menorrhagia or metrorrhagia), in a woman with a previously known superficial intramural or submucous uterine fibroma, together with the more rapid increase in size of the uterus than in simple tumor. During the first half of pregnancy just as hypertrophy and hyperplasia of the normal uterine musculature occurs so do fibromata of the uterus sometimes increase in size very rapidly, due perhaps less to an actual true growth or degeneration process than to an edematous softening. Cameron saw a hen's-egg-size uterine fibroma that in the first 5 months of pregnancy became so large that both the pregnant uterus and fibroma together were as big as a pregnant uterus at the ninth month. Rapid growth in fibroids without pregnancy, it should be borne in mind, may occur in soft myomata or myxomatous or sarcomatous degenerated fibroids. Rapid growth in pregnancy without fibroid also occurs in cases of hydramnion and bladder mole. In primiparæ alone are the breast signs, e. g., areolæ and the enlargement of Montgomery's glands and the secretion of colustrum, of value. The morning sickness is a symptom of value in both primiparæ and multiparæ. Souffles, like the placental souffle, are heard frequently over cavernous fibromata and, therefore, are of no value as a sign of pregnancy, in fibroma. Jacquemin's slaty color of the vaginal mucosa may be from fibromata alone. In fibromata high up near the fundus the Hegar sign may be present, but if the fibromata are very intimately and diffusely united with the lower segment of the uterus or large multiple and irregular in shape and surround the uterus so that the healthy uterine wall is inaccessible to palpation the Hegar sign cannot be elicited. The softening of the corpus uteri can be appreciated in the parts free from tumor as well as changing in consistency, intermittent uterine contractions of Hicks, on palpation per vaginam or per rectum. Softening of the cervix is an especially valuable sign, but even this may occur with fibroma uteri in the non-pregnant. In abortion, immature or term labor the expulsion of a superficial intramural or submucous fibroma before the birth of the child can easily be mistaken for the child's head, while expulsion of the fibroma after the

birth of the child has led to its being mistaken for the placenta. The question whether it is simple pregnancy always has to be answered, for occasionally in malpresentations the child's head may simulate a fibroma. Judging from Cameron's case, a rapidly growing fibromatous pregnant uterus if retained in the true pelvis as it enlarged might about the second month compress the rectum, bladder, ureters and iliac vessels causing varicosities and edema of the lower extremities, or possibly hold the uterus in retroverson or retroflexion with the equally early bladder symptoms of retention like those of the simple incarcerated retroflexed gravid uterus which usually do not occur till near the fourth month of pregnancy. A pregnant uterus with a high corpus or fundus fibroma that rose safely into the abdominal cavity might by the end of pregnancy markedly distend the abdominal cavity, pushing upward the intestines and subdiaphragmatic organs, interfere with the descent of the diaphragm, cause dyspnea, crowd the intestines and interfere with digestion and nutrition, possibly cause ascites and enlargement of the lateral abdominal veins, edema of the extremities and the whole train of symptoms much as would a very large intra-abdominal ovarian tumor.

One should also bear in mind to exclude the bicornuate uterus, twins, fibroma of the anterior abdominal wall, ovarian tumor, incarceration of the gravid uterus, extra-uterine pregnancy, pyosalpinx and chronic inflammatory infiltration.

CERVIX FIBROMATA.

The cervix fibromata, like those of the corpus, are intramural cervical fibromata which occasionally reach considerable size. One lip of the cervix being enlarged, the other lip often appears as a half-moon-shaped fold. In very large cervical tumors the uterus appears as a small appendage simply on the top of the big tumor. The submucous cervical fibroma may become pedunculated early and strangulated, forming an edematous polyp, or may remain broad based. The differentiation of fibroma-polyp, mucous-polyp, adenoma-polyp, sarcoma-polyp, and even early bladder mole should always be carefully made microscopically. The pedicle may only apparently originate in the cervix, but in reality extend through the cervix and be really that of a corpus fibroma or other tumor. The paracervical fibroma may grow outward into the para-cervix, upward into the parametrium, downward into the para-proctium. The diagnosis of cervical tumor is usually simple on bimanual and speculum examination. In the cervical fibroma the corpus can usually be palpated above, provided the tumor be not too large or the abdominal walls too thick. Fortunately they are more rare (9 per cent.), as they are liable to cause much trouble due to ureter pressure and general intrapelvic pressure if large. Lengthening and distorsion of the cervix and lower uterine segment during parturition cause slowness of dilatation due to the presence of the hard fibromatous tissue. The tumor-free portion may not be sufficient to dilate and labor may come to a standstill or the tumor may obstruct the passages, hinder engagement and cause malpresentation, deflexion of head or prolapse of cord or extremities. A very small fibroid of the cervix might become flattened and allow the child to pass or if the labor

pains are strong and the tumor only slightly under the mucosa or pedunculated it may be forced out of its bed and expelled before the fetal presenting part.

An anterior cervical fibroma may even be drawn up above the brim and allow the passage of the child, a thing hardly to be expected in a retrocervical myoma.

TREATMENT.

The treatment of fibromata suggests itself from the foregoing. In cases where there are no symptoms and only a very small subserous or intramural tumor apparently devoid of complications in a young woman very desirous of bearing children, there is a possibility of these women becoming pregnant and going to term and the completion of labor; but such cases becoming pregnant, should always be in a hospital and under competent gynecologic supervision.

In the non-pregnant ergot, which causes the smooth muscle fiber of both the uterine wall and blood vessels to contract, has been too much used as a temporizing measure to limit the hemorrhage in the submucous and possibly to slow the rate of growth in the other varieties. It is at best a dangerous palliative proceeding.

Antiseptic tamponade with iodoform gauze should, if temporarily resorted to for hemorrhage, be allowed to remain but 24 hours without removing. Currettage or abrasio mucosæ may cause a disturbance of the nourishment of either a submucous or, indeed, a superficial intramural tumor and increases the risk of infection. Electrolysis of Apostoli, formerly so much vaunted, carries with it the grave dangers of infection from the frequent introduction of the pole in the uterus, as well as the futility of application. The mucosa may be destroyed, and even electrolytic changes occur in the tumor itself. Electro-puncture by the needle passed into the tumor may result in a fistula or necrosis infection and death. Before leaving the ergot and electricity treatment it is well to remember that one has only a clinical diagnosis, and what one thinks a fibroma may really be a sarcoma, and, therefore, such treatment is blind, as are all palliative measures.

The operative treatment is the only treatment of fibromata and admits of modification in cases carefully selected, e. g., a subserous fibroma or an intramural fibroma might be removed during the reproductive period of life by laparotomy (myomectomy) and the uterus allowed to remain with the idea that the woman might become pregnant and bear a child; yet in most cases there are multiple tumors, and there always remains the possibility of the sarcomatous and other degenerations, the rapid growth in pregnancy, the obstruction of labor and the complication of the puerperium to think of, yet, if possible, the woman should be given the chance to elect.

In the submucous fibromata we have many very ingenious methods of removal designed to remove them by the vagina, and thus avoid opening the peritoneal cavity, either by "morcellement" (Pean) or "splitting" the uterus (Mueller), yet we must bear in mind that in submucous tumors, especially if the cervix be open or the tumor protrudes through,

we have the very great liability to infection of the endometrium, and consequently we have to work in a badly infected field; indeed, the very simple apparently pedunculated cases may really include the inverted uterus so that the peritoneal cavity is accidentally opened. At any rate we are working blindly and making an atrium for the entrance of the infection. The dangers of operating on these apparently simple appearing submucous cases cannot be too strongly emphasized. The intraperitoneal route is much more satisfactory. Fortunately 91 per cent. of the fibromata are confined to the corpus and the supravaginal operation of Schroeder often suffices. In other cases where the cervix must also be removed the chances of injuring the ureters and infection is often much less through the abdominal route.

PERINEAL PROSTATECTOMY.*

ALEX HUGH FERGUSON, M.D.
CHICAGO.

Different surgeons employ different incisions of the skin and subcutaneous structures to gain access to the enlarged prostate. The median incision is the one of choice in the vast majority of cases, because through it rapid and efficient work can be executed with excellent results, especially by a man whose hand is not too large and who is dextrous. Some excellent surgeons have such large fingers that they are practically excluded from attempting perineal prostatectomy. While a short slender finger is at a disadvantage as compared with a long slender digit, still, with the aid of instruments which drag the gland down into the perineum, the former can do satisfactory work. As one surgeon has aptly said, "A short finger becomes longer by experience," but I might add that a stout finger acts as a cork.

Incisions: Median, transverse, Y-shaped, T-inverted, semilunar and modification of these.

From a sufficient number of cases to enable me to have an opinion, I am compelled to say that the median perineal incision is my preference. In a very limited number of cases the entire prostate can be removed without injury to the prostatic or membranous urethra (Macewen and Ferguson). This can never be done suprapubically. Nearly all the operations by the perineal route open the membranous and prostatic urethra; the one for the purpose of introducing instruments which aid in the operation; the other to afford ample room for the enucleation of the gland. In the intracapsular method the capsule must be opened to find cleavage for the finger to separate the gland from its capsule.

While this is true, we must admit that some cases are more suitably dealt with by the suprapubic route. In my opinion, they are vastly in the minority. From my experience I would advise that almost all cases should be first explored through the perineum. If certain portions of an hypertrophied prostate cannot be removed through the perineum, it does

* Read at a meeting of the Chicago Medical Society, March 16, 1910.

not compromise either the surgeon or the patient to open suprapubically and complete the operation. It seems to me that this is much safer than suprapubic prostatectomy alone, or the combination operation reversed. More knowledge can be gained of the size, shape and extent of prostatic protrusions into the bladder by the finger in the perineal wound than by cystoscopy before operation.

Operation.—The bladder is washed out with an antiseptic solution. Six or eight ounces of the fluid is then left in the viscus. A plug of gauze is next inserted into the rectum. A grooved staff is passed per urethram into the bladder. Then the patient is placed in the extreme lithotomy position and held by assistants.

Now pass the middle finger of the left hand into the rectum. Split the perineum in the median line from behind forward. Open the membranous urethra and prostatic urethra as far back as the sinus pocularis, and pass the index finger of the left hand into the wound as the staff is withdrawn. In exposing a membranous urethra to median incision it is probably better to teach that the skin be cut first and careful dissection made through the other soft structure down to the urethra in order to insure against injury to the bulb. Remove the finger from the rectum and pass the prostate depressor into the bladder as the finger is withdrawn.

Remove the glove from the left hand and reinsert the finger into the wound and search for a line of cleavage within the capsule of one or both lobes of the gland. Usually the cleavage can be found near the apex of the prostate and to the left, because the knife generally cuts a little to this side as it opens the prostatic urethra. If cleavage is found, a small transverse incision is made alongside of the finger through the capsule. By means of the prostatic depressor the gland is pulled down as it becomes enucleated by the finger, sometimes in less time than it takes to describe the process. It will be found that the separation of the gland is interfered with where it is covered with vesical and prostatic urethral mucosa. Pulling and tearing should be avoided here; large portions of prostatic tissue may be grossly cut away by means of my prostatic cutting forceps. Both lobes being removed, the interior of the bladder may be readily explored by the finger. If there are protrusions of prostatic tissue in the shape of a pathologic middle lobe, or prolongations from either or both lateral lobes, the first thing to determine is whether the growth is sessile or pedunculated. If the former, it is an easy matter to enucleate it with the finger or remove it by morcellement. If the growth is pedunculated and cannot be delivered through the perineal wound, then the operation should be completed suprapubically.

Where enucleation is easy and the bladder is not septic, deep sutures (No. 0 chromic catgut) are employed to close the urethra and bring together the edges of the levator ani muscles. A small cigarette drain is employed to take care of the discharge from the perineum alone, and the skin is closed by horse-hair.

In septic cases and in very old men with marked prostatic deformity, the gland must be removed as rapidly as possible. The safety of the

rectum from injury and the rapidity of the operation may be increased by the use of a double-edged gouget with a beaded point which strikes the groove in the staff and the knife is passed through the prostatic urethra in a firm, gentle curve. The gouget splits the prostatic urethra laterally, its flat posterior side is toward the rectum and protects it from injury. This is not the operation of choice.

Total enucleation of the prostate gland by Fryer has taught us one thing, viz.: that the preservation of the prostatic urethra is not of so great importance as the advocates of perineal prostatectomy believed. With this in mind we can attack the enlarged prostate without regard to the prostatic urethra and rip it from its bed where all the structures are in reach of the finger One type of gland, the chronically inflamed prostate, usually atrophied, can only be removed piecemeal. A chronically inflamed prostate cannot be removed suprapubically at all. This is also true of prostatic abscess and calculi, and recent experience of Young demonstrates that a malignant prostate can be best removed through the perineum.

In my opinion, it seems unsurgical to attack a contracted bladder from above, except possibly in two steps. Bilateral incisions of the capsule as devised by Proust and exploited by Young, in order to save the ejaculatory ducts, is not considered by decent old men. While the many tractors and depressors are often clumsy and inefficient, though not all immaterial, I prefer my own.

Practically all the sequelæ formerly obtained in perineal prostatectomy in a small percentage of cases are now prevented by the experienced operator. The worst result that can be obtained in prostatectomy is death. "While old age waits to hear the keel upon the other shore" and the old man welcomes death to misery, still life is dear and endurable even though it be almost intolerable.

It is interesting to note that for years the mortality of suprapubic prostatectomy (McGill) when combined with lithotomy has been less than when no calculus was present.[1] Burckhardt gives 13.8 per cent. mortality (4 deaths in 29 cases) for the former operation, and 20.8 per cent. (16 deaths in 77 cases) for the latter. This difference can only be explained on the assumption that the presence of the stone necessitated operative interference earlier, and while the patients were better able to endure an operation than when no calculus existed. . . . The death rate from McGill's operation (partial suprapubic prostatectomy) has always been higher and always will, it seems.

Belfield collected 88 cases of McGill's operation with 12 deaths, a mortality of 13.6 per cent.; Moullin in 1892 collected 94 cases, with 19 deaths, or 20.2 per cent. mortality.

Watson collected from various sources 243 cases of total suprapubic prostatectomy, with 28 deaths, a mortality of 11.5 per cent., while among perineal operations he found 33 deaths, a mortality of 6.2 per cent. . . .

I have now had 185 consecutive cases of perineal prostatectomy with seven deaths as recorded, a mortality of 3.7 per cent. This includes all of the early cases, when the operation was in a developmental stage and much less satisfactory—the patient being confined to bed and the drainage not removed for much longer periods. It certainly does not represent the true mortality. "During the past two and one-half years there have been one hundred cases with only two deaths, a mortality of 2 per cent. But the most convincing evidence of the benign-

1. Deaver's Enlargement of the Prostate, pp. 210-212.

ity of the operation is the fact that in the last sixty consecutive cases there has not been a single death or bad result."[2] (Young.)

[3]"My experience, then, has been that the restoration of function is more complete and lasting after the perineal than after the suprapubic. . . . In the past four years I have operated on 35 cases of perineal prostatectomy. Two cases have died, one three days after operation, the other at the end of a month."

[4]A study of 485 cases of prostatectomy for hypertrophy of the prostate, occurring in the practice of 13 different operators, wherein the cause of death is given, shows in all 33 deaths. Of these deaths ten were due to such causes as cancer of the liver, pulmonary tuberculosis, etc., in no way connected either with the operation or the pathologic condition for which the operation was undertaken. Eight of the deaths were due to exhaustion, pneumonia, pulmonary embolism and sepsis, conditions caused by the operation itself or the anesthesia. It would be nearer the exact truth, perhaps, to say of the deaths due to sepsis, that most of them were due to conditions existing before the operation was done, but for the present, at least, we will consider them as deaths due to the operation *per se*. The remaining 15 deaths were due to pyelitis, pyelonephritis, and other conditions secondary to and caused by the hypertrophy of the prostate, and existing at the time of the operation. Miles F. Porter.

The total death rate in this series of cases then, is less than 7 per cent. "The death rate of the operation is less than 2 per cent., while the conditions secondary to and caused by the enlarged prostate is 3.5 per cent. In other words, half of all the deaths following prostatectomy are due to conditions set up by the enlarged prostate. The deaths from these conditions outnumbered the deaths from the operation *per se*, two to one. This means that the death rate in hypertrophy of the prostate, treated without operation, is about 4 per cent., while timely prostatectomy will yield a death rate of 2 per cent. or less. If there is any error in these statistics, it consists in attributing to the operation itself, too many deaths, and charging to the pathologic conditions secondary to the enlarged prostate, too few. Fuller, speaking of his personal experience with prostatectomy in over 300 cases, says: "I feel that if cases complicated with very marked uremia are excluded I can operate with an average risk to the patient of not more and probably under 5 per cent. *Death from the operation itself is practicaly nil.* (Fuller's cases are not included in the 485 cases studied.))

Goodfellow has done 105 prostatectomies with but two deaths. Watson gives the death rate in enlarged prostate treated by catheterization as 7.7 per cent.

C. H. Mayo, including his brother's cases with his, says: "In two hundred and ninety-one cases, including 26 for carcinoma, we have had 28 deaths."

Willy Meyer writes as follows: "I have done, outside of some 85 Bottini operations for prostatic enlargements, 41 suprapubic and 8 perineal prostatectomies. . . . Personally I prefer the suprapubic to the perineal operation."

Crile says: "In my experience in about 25 operations for prostatectomy the patients themselves were pleased with the result."

My own experience (Porter) is limited to 25 cases. There were three deaths, all due to septic conditions (pyelonephritis and cystitis) which existed at the time of the operation and because of which condition the patients finally asked for relief. . . . The fatalities following prostatectomy are largely due to conditions resulting from the hypertrophy and existing at the time of operation. Prostatectomy, in the absence of serious complications, entails a risk of life of *less than 2 per cent.* The death rate in enlarged prostate treated by catheterization is over five per cent. (Miles F. Porter.)

[5]Dr. Stanley Stillman of San Francisco referred to the custom of Sir William Macewen, of performing the suprapubic operation in all cases in which the urine could be rendered fairly healthy, but when this could not be done he performed a double lithotomy incision for drainage purposes, followed by an interval of a week

2. Johns Hopkins Hospital Report, 1906, iv, 115. Hugh H. Young, Study of 145 Cases of Perineal Prostatectomy. Final Note as to Mortality Jan. 7, 1907.
3. Cabot, A. T.: Modern Operations for Complete Removal of the Prostate, 1907.
4. Porter, Miles F.: Jour. Am. Med. Assn., May 23, 1908.
5. Jour. Am. Med. Assn., July, 1909.

or ten days, during which time granulation tissue lined the incisions which were made, and the capsule of the prostate retracted; in that time the cut surface of the prostate protruded from the wound, the prostate itself was reduced in size as the result of complete dissection, and ten days later he would shell out with his index finger each lobe of the prostate, with no bleeding, and little danger of infection, inasmuch as the urine had become fairly healthy in the interval. Dr. Stillman had followed this plan himself for two years with much better results than he ever obtained from other methods of prostatectomy. His preference is distinctly for the suprapubic methods of operation where the urine is healthy and for Macewen's method where the urine cannot be rendered healthy prior to the operation.

[6]*Percentage of Mortality.*—Including cases of cancer of the prostate in which the typical operation of conservative perineal prostatectomy was employed, 13 recent cases which have not been tabulated above, 20 cases in which operation has been performed since the above paper was written some months ago, and a few cases in which the technic was not the typical one and which have not been tabulated above, there have been 400 cases of perineal prostatectomy, with 13 deaths, a mortality of 3.25 per cent. . . . During a period of two years and eight months 128 consecutive cases were subjected to the operation of conservative perineal prostatectomy without a single fatal result; 43 of these 128 patients were over 70 years of age and two were over 80 years of age.

[7]Suprapubic enucleation of the prostate. In Freyer's series of 644 operations of enucleation of the prostate to date, there have been 48 octogenarians, and nine bordering on this period, with six deaths. . . . In connection with these 644 operations there have been 39 deaths in periods varying from six hours to thirty-seven days after operation, or a mortality of 6.05 per cent. The mortality has been gradually diminishing from 10 per cent. in the first 100 cases, to 4.24 per cent. in the last 200. Freyer mortality 6.05 per cent.

[8]M. Tuffier believes that the suprapubic operation is easier and quicker to perform than the perineal. When the gland is very small and the abdomen very fat, he selects the perineal operation, and quotes from Proust, Watson, Horwitz, Leque, Hartman, Pauchet, Rafin, Young and Albarran, to the effect that there were 2,222 cases, the average mortality being 6.23 per cent.; out of the total number of cases operated on the per cent. of deaths is about the same in both operations (35 per cent. perineal and 33 per cent. suprapubic). Shock is given as the cause of death in 17.8 per cent. operated on by the suprapubic method.

The general mortality is about 4 per cent. in perineal prostatectomy. Reestablishment of spontaneous urination and relief of vesical infection are the rule. The genital loss is habitual. The age of the patient and the lesions are not contraindications. The relative integrity of renal activity is necessary. Patients with grave organic deficiency, such as diabetes and albuminaria, succumb to pretended shock. The two methods have their advantages and disadvantages.

Mortality.—Mortality after prostatectomy is the subject of a paper by Drs. Tenney and Chase,[9] in which they accept as possibly due to the operation every death reported as occurring within six weeks. From their table we find that 2,342 patients were operated on through the perineum, and 667 suprapubically. It will be seen that the average mortality by the perineal route is 7.9 plus. The average mortality by the suprapubic route is 13.2 plus, nearly twice the mortality of the operation through the perineum.

In my own cases I had no deaths in the first series of 21. Following that I lost three cases, one from renal insufficiency in 48 hours. This was considered a very unfavorable case for any operation. Another

6. Young, H. H.: Perineal Prostatectomy, Jour. Am. Med. Assn., March 5, 1910.
7. Ricketts: Jour. Am. Med. Assn., Jan. 29, 1910.
8. Ferguson, Alex. H.: Jour. Am. Med. Assn., 1906.
9. Ann. des Mal. G. U., October, 1902; Jour. Am. Med. Assn., Oct. 25, 1902; Centralbl. f. krankh. d. Harn. u. Sex.-Org., 1901, p. 571; Philadelphia Med. Jour., June 8, 1901; "Treatment de l'Hypertrophie de la Prostate," Report au xv, Cong. Intern. de Med., 1905.

patient died in twelve hours from an overdose of morphin, and the third succumbed on the third day, an unfavorable case because of old age and emaciation. This makes my mortality between 3 and 4 per cent. in 103 cases, and does not include five deaths following prostatectomy, three from carcinoma and two from acute tuberculosis.

There have been no permanent fistulæ seen in those with pus-furnishing bladders, which were inflamed, trabeculated and with stones, pouched or diverticulated. The natural tendency of the perineum is to close spontaneously, but, so long as pus emits, a fistula is likely to persist or recur. I had two of these cases. Injury to the rectum during operation is more of a blunder than an accident, and secondary rectal fistulæ are caused most frequently by rough treatment from the eighth to the twelfth day, when granulation is profuse. This latter has occurred in the case of two of my patients in whom the after-treatment was not carried out by myself. Three patients were wearing urinals on account of partial incontinence, which was more acceptable to them and to their relatives than death. One of these, aged 70, accepted the operation only when life became unendurable from pain due to cystitis, etc. Considerable sloughing at the seat of operation from the skin inward occurred. There was one man with impotence following, who avers he proved his vigor two nights previous to the operation. One case of stricture secondary to operation was cured by perineal section. Five patients had epididymitis. One had unilateral intranephritic and extranephritic abscess developing three weeks after operation. I cured him by incision and drainage. Stone in the bladder was present in six cases.

THE TUBERCULAR QUESTION IN RELATION TO THE ORGANS OF DIGESTION.*

FENTON B. TURCK, M.D.
CHICAGO.

The mortality records, according to Naegeli's figures, indicate that every adult is or was some time in life infected with tuberculosis. Betzke[1] shows in 1,100 autopsies 58.2 per cent. were tubercular. He shows that the majority coming to autopsy show signs of tubercular infection; but more encouraging signs show that the mortality in the last ten years is diminishing in Germany. In 1908 the mortality was 16.46 per 10,000 living, as against 31.9 in 1875. The reduction is striking when we consider that the population has greatly increased.

Franz[2] shows that in 1902, by the reaction of tuberculin, this was positive in 38.7 per cent. of the Hungarian and 61 to 76 per cent. of the Bosnian soldiers, and he concludes that if, instead of using 0.01 gram instead of 0.003 of the tuberculin, the findings would reach the high record tables given by Naegeli on cadavers. But it is interesting to note

* Read before the South Side Branch of Chicago Medical Society, Jan. 10, 1910.
1. Berl. klin. Wchnschr., March 1-9, 1909.
2. Wien klin. Wchnschr., July 15, 1909, xxii, 8.

that very few of the soldiers showed any signs of tuberculosis since 1902, indicating the great value of outdoor life and regular hygiene.

White and Fox[3] made some interesting observations on monkeys in the Philadelphia Zoological Gardens. Of 128 monkeys tested with tuberculin, 37 were positive. Adhering to strict hygienic measures, no monkey that passed the test since 1896 has had tuberculosis. We await the time when human beings obtain the same opportunities and chances that are given these monkeys.

Age When Infection Occurs.—Romer[4] agrees with Behring that tuberculosis in adults is the result of infection in infancy. He infected guinea-pigs, and after a certain period elapsed reinfected them, causing pulmonary tuberculosis with cavities. He deduces from his experiments that the organs of the body show a relatively increased immunity except the lungs, which bear the brunt of the second infection.

Sawyer[5] shows that tubercle bacilli experimentally introduced into the blood are rapidly removed from the circulation and are arrested in lung tissue. To test the route by which particles may reach the lungs, Williams[6] placed rabbits and guinea-pigs in an atmosphere of fine carbon particles, and found that the carbon particles had to be swallowed first, pass through the stomach and become absorbed by the intestines and finally deposited in the lung tissue (anthracosis). Williams concludes that the digestion and absorption of tubercular material are the most common sources of infection. Inhalation and passage directly to the lungs is comparatively rare.

The early sign of tuberculosis, gastrosuccorrhea, Blume[7] demonstrates is the defensive reaction on the part of the stomach against the tubercular toxin, as shown by the immediate benefit derived from antitubercular treatment. Following tubercular infection, Blume observed intense reactions simulating spasm of the pylorus, perforation of the stomach, appendicitis. Treatment directed against the tubercular infection corrected the gastric and intestinal symptoms.

Freund regards most, if not all, cases of viceroptosis as cases of tubercular infection. Albu[8] has recently regarded these cases of congenital infection as being mostly of tubercular origin.

I have for years treated all cases of splanchnoptosis on general hygienic lines, similar to the methods of treating tuberculosis, and the success I have found is in ratio to the strict open air, dietetic treatment, with careful attention to the general laws of hygiene.

Yamanouchi[9] said the detection of tubercular infection may be readily determined by reaction of anaphylaxis produced in animals. The method is first to inject 5 c.c. of blood serum from a suspected patient into a guinea-pig. A day or two later intravenous injection is given of tuberculin or tubercle bacilli extract in salt solution. The reaction is shown by dyspnea, weakness and finally paralysis, and death in one or

3. Arch. f. Int. Med., Dec. 15, 1909.
4. Berl. klin. Wchnschr., May 3, 1909.
5. The Arch. of Int. Med., Dec. 15, 1909.
6. Brit. Med. Jour., Aug. 21, 1909.
7. Ugeskrift d. Laeger, Copenhagen, July 1, 1909.
8. Berl. klin. Wchnschr., Feb. 15, 1909.
9. Wien. klin. Wchnschr,. Nov. 12, 1908.

two hours. According to Yamanouchi, non-tubercular and patients with other diseases give a negative reaction to the anaphylactic test.

According to Lewis,[10] the reaction of anaphylaxis is concerned in the removal of the endotoxin or bacterial proteid from the body. The defense of the body against tuberculosis is regarded by Arnuth[11] and Dluski as due to the older neutrophile and polynuclear cells which are the antitoxin bearers or producers and the degree they are destroyed by the action of the infection is characteristic both of specific infection and the resisting powers.

Destruction of the bacilli (bacteriolysis) of tuberculosis, Deycke[12] shows, may be produced by two elements of brain tissue, cholin and neurin, in a 25 per cent. solution as a vaccine producing a destruction of bacilli in a few moments. He reports results so far surpassing his expectations.

In local infections, such as renal tuberculosis, Wilhelm Karo, of Berlin,[13] extols the more refined methods of the use of tuberculin, claiming excellent results, and thinks it of greatest value in treating renal tuberculosis and in its diagnosis. Bladder symptoms also clear up after the tuberculin treatment.

While science is thus attempting to solve the finer points and the underlying principles of the cause and cure of tuberculosis, we are at work applying empirically the general laws of hygiene, fresh air, proper diet and right mode of living, and thus reducing the awful pestilence, tuberculosis. When we found, through the efforts of the immortal Reed and Carroll, that yellow fever was spread by the agency of the mosquito, we did not wait to find the infecting germ, but as soon as our government gave us the opportunity and the means, we snuffed out the disease as if it were a candle, and Havana, but a short time ago the breeding-place of the pestilence, now is as healthy as any city in the world. If our government will give us the same opportunity and means with which to fight the white plague, and with our Gorgas', Woods', Evans' and Billings', we will wipe out this curse that now threatens mankind in this city and in this country.

We know now that fresh air and sunlight, in connection with appropriate diet, will increase the polynuclear cells and the antibodies of the body against tuberculosis; that we must begin this work early, even with the babies, placing them under selected dietetic conditions, with plenty of fresh air. In Chicago we have inaugurated the use of baby tents, supplying suitable foods, as in the care of adult cases. It is the open air that stimulates the desire for food and encourages normal metabolism, but it is out of the food materials we supply the body that the defensive substances against tuberculosis are formed. To throw a patient simply into the open air, uncared for, he will die of tuberculosis, the same in whatsoever country or climate he is placed. The laws of diet, therefore, become the center around which all the other measures revolve.

10. Arch. Int. Med., Dec. 15, 1909.
11. Beit. z. Klin. der Tuber., Wurzburg.
12. München. med. Wchnschr., Sept. 28, 1909.
13. Med. Rec., Oct. 2, 1909.

We know that appropriate diet, prescribed as to age, mode of life and circumstances, will produce marvelous results; that protein or albuminous food should be given in an easily digested form to the limit of digestion and assimilation, but not beyond that limit of absorption and utilization. That the best, easiest and most rapidly digested form of proteid is meat, especially when free from extractives. That extracts of beef, soups and gravies and all patent and proprietary meat food and other frauds are worse than worthless, not only as a food, but they act as poison to the system, as my own and other investigations have shown.

We prepare chopped meat by first removing the extractives with cold water, by pressure, then placing the pulp that remains in a tightly covered jar, with considerable water, and cook it for several hours under pressure. This method removes the extractives and nearly all the indigestible fat (composed chiefly of stearin), and changes the connective tissue into gelatin. Meat prepared in this way is nearly three times as nutritious as in the original form, or, in actual figures, 50 to 60 per cent. protein, as against 20 per cent. It is quickly digested in the upper digestive tract, leaving no residue, such as undigested connective tissue, for the development of micro-organisms in the lower intestinal tract. The meat can be creamed or supply a butter fat more digestible than the stearin removed by the process. Meat loaf, escalopped tomatoes and meat croquettes, rice and meat with curry and various flavors to suit the taste, such as mushrooms, bay leaf, celery, etc., are also added.

A most digestible form of starch, rich in carbohydrates, is furnished by rice. This can be taken when properly prepared in large quantities, and is better than too great a quantity of wheat bread. In rice we should obtain unpolished rice so as to retain the outer coat of albumin, and even soaking is prohibited, so as not to separate the albumin from the kernel and avoid the nutritive value from being lowered. The rice should be boiled until the kernels have swelled up, then placed in a tightly covered double boiler for two to four hours, or longer, under pressure, which partially hydrolyzes the starch. An autoclave is the most serviceable instrument in preparing both meat and starch food, but with sufficient time we may in the ordinary household reduce the rice to a rapidly digestible and assimilable food.

Fresh vegetables, prepared by long cooking, which renders them more easily digested, are used in cases of weak digestion. Fat which has a low melting point, such as butter, cream, olive oil, form the most digestible and assimilable form of fat food, far surpassing the animal fats, such as stearin, which hinder digestion.

We know that we must maintain the integrity of the digestive tract, especially to restore the motor power of the stomach and intestines, and bring the alimentary tract up to the highest degree of physiologic function. Infectious and putrefactive micro-organisms in the intestines must be kept under strict control, producing food that is entirely digested and absorbed in the upper alimentary tract, leaving no residue for the growth of germs in the lower ileum and cecum, thus rendering difficult the production of their toxins.

Ballast of chemically inert substances to stimulate mechanically the peristalsis of the lower bowel can be provided by adding cellulose to the food. One of these substances of value is wheat bran, which can be added to the breakfast food or mixed with bread. Raw vegetables, salads, especially raw cabbage finely cut and a moderate amount of raw fruit, thoroughly masticated, will furnish sufficient acid to combat intestinal putrefaction. In cases where the nourishment should be especially rich in nitrogen, as Labbe and Vitry[14] show, the use of the lactic acid bacilli is contraindicated. The principle that my experimental and clinical work seems to demonstrate is more the importance of producing auto-sterilization rather than antiseptic measures.

All knowledge we possess relative to the prevention and cure of tuberculosis must in a modified form be imparted to the whole people, now ignorant, but burning for instruction for their welfare, health and happiness. The health bulletin of the city has been so useful that it has been copied by other cities. The churches, under the instruction of competent physicians, should be encouraged to form classes similar to those inaugurated by St. George's Church, New York. Every public school should be a center of instruction for the prevention and cure of tuberculosis, thrown open evenings to the parents of school children. The press, at least the Associated Press, should employ a physician to report regularly the exact facts relating to the cause and prevention and cure of tuberculosis. As the farmer is taught by a bulletin and educated in the proper care of animals, we can expect similar results when the masses are educated in personal and public hygiene. As Florence, removed from the cities like Rome, Naples and Genoa, was the birthplace of Renaissance, so may we not look upon inland Chicago as being a center for a new Renaissance in the health, prosperity and happiness of this great nation?

THE RESECTION OF BONY DEFLECTIONS OF THE NASAL SEPTUM.*

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In almost all deflections of the nasal septum, bone must be removed in order to obtain perfect breathing after a submucous resection; nevertheless, experience has shown me that many operators take away only the cartilaginous portions of an osseocartilaginous deflection and leave its bony part to continue to obstruct the nostril. Before I appreciated the need of a complete removal of all deviated or thickened bone I, too, sometimes contented myself with cutting out only the bent cartilage, always regretting my conservatism and in several instances being obliged to perform an extensive bony resection in a second operation in order to obtain a satisfactory result.

14. La Presse Med., Aug. 4, 1909.

* Read by Dr. John Edwin Rhodes at the meeting of the Chicago Laryngological and Otological Society, Dec. 14, 1909.

The chief reason why bony deviations are so often left untouched is the difficulty of their removal, a difficulty increased by the insufficient access to the operative field obtained in some methods of operation. In addition, the fear of making a perforation during the denudation of the bone deters many from resecting this, especially that portion called the ridge, after the cartilage has been successfully removed. The thick periosteum which envelops the ridge may hide it so completely that operators may, as I have seen, fail to find it at all. While my earlier bony resections proved difficult, changes in the technic have made those of my later work so uniformly satisfactory and free from perforations that I have been impelled to describe in this article my present method of the removal of bony deflections.

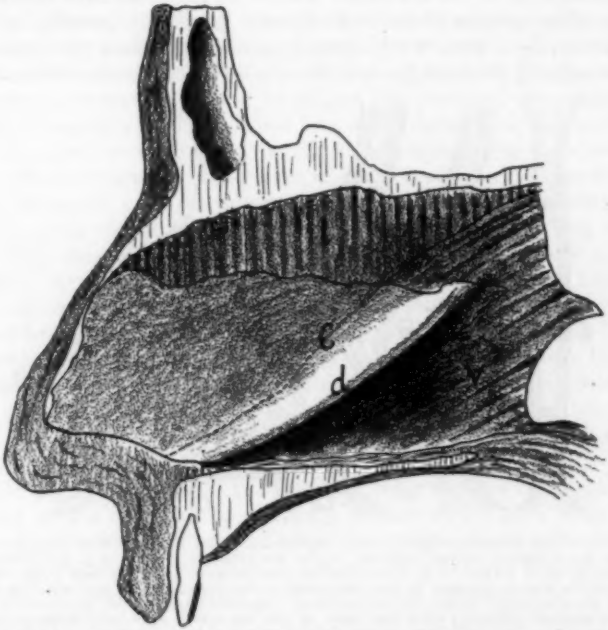

Fig. 1.—Lateral view of the skeleton of the nasal septum; 1, perpendicular plate of the ethmoid bone; v, vomer; c, cartilage of the septum overlapping the vomer upon the displaced articulation and ending in a sharp cartilaginous ridge, d.

Much of the difficulty experienced by operators in taking away the bony portion of deviations lies in an imperfect conception of the often confusing anatomic peculiarities of the skeleton of deflections, and for this reason the surgical portion of this paper is preceded by some anatomic description of the chief divergences from the normal presented by bony deflections in my series of 387 cases.

Anatomic Peculiarities of Bony Deflections.—In this description, for the sake of convenience, the bony wall arising from the nasal floor created by the blending of the anterior portion of the vomer, the incisor

crest and superior maxillary crest are designated collectively by the customary term of "the ridge," used above.

One of the most striking of the anatomic divergences found is the displacement of the septal cartilage from its proper position on top of the ridge to an attachment to its side (Fig. 1) so that the cartilage overlaps the bone. In the normal septum the inferior angle and posterior inferior border of the quadrangular cartilage of the septum rest vertically upon the narrow, rough and often channeled anterior border of the vomer and superior border of the incisor crest, which form the top of the ridge, and in the straight septum the quadrangular cartilage, growing in proper proportion to the bony frame containing it, remains resting centrally and vertically upon an upright ridge (Fig. 2[1]). When, however, the cartilage, as in non-traumatic deflections, grows too fast for its bony frame, either because of its own excessive growth or because the frame stays too small, it distorts the frame by pressure, bending out its margins by the wedging force of its growth. In this manner the vomer, incisor

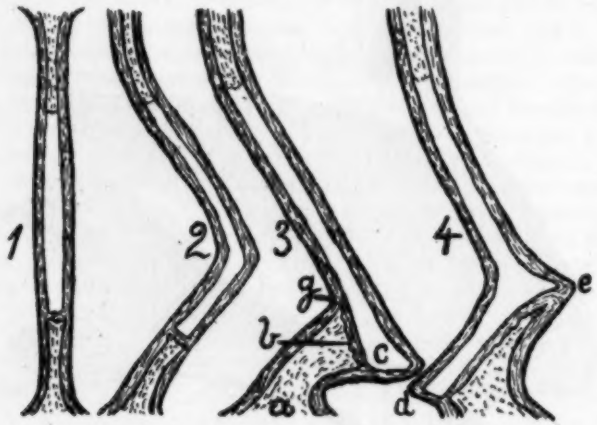

Fig. 2.—Vertical section of the nasal septum about its middle. 1, a straight septum, showing the cartilage resting vertically upon the ridge; 2, a view of a horizontal angle of deflection as it would occur if the articulation between cartilage and ridge remained unaltered; 3, actual changes in the articulation and structures of the deflected septum as they are commonly found; a, overhanging ridge enveloped in its periosteum; b, the articular surface displaced into the naris of the convexity with the cartilage, c, overriding the bone. The individual perichondrial and periosteal envelopes of the cartilage and bone are shown; g, groove of the concavity of the deflection; 4, expectional overriding of the ridge by the cartilage in the naris of the concavity instead of the convexity, creating a ledge, e, and d, in each naris.

crest and perpendicular plate with which the cartilage articulates are bent outward, the ridge becoming inclined toward the nasal floor and, in curving over, causing the narrow rough surface upon which the cartilage rests and with which it articulates to look to the side, instead of upward. At the same time the pressure of the growing cartilage spreads this articulation by forcing downward that margin of the articular surface which comes lowest in its new position. In this way the osseocartilaginous synarthrosis between cartilage and ridge becomes not only displaced in position and direction, but also greatly widened (Fig 2[3b]).

The lower boundary of the rough articular surface so displaced from the top to the side of the ridge and broadened develops into a sharp bony ledge of the kind sawed off as an exostosis, while the cartilage attached to the articular surface overlaps the bone laterally and ends inferiorly in a sharp angle (Fig. 2^{3c}) which overlies the margin of bone, or bony ledge referred to, and, resting upon it, is sawed away with it by those neglecting to properly resect the deflection of which it is but a small part. The overlapping of the cartilage in the displacement and broadening of its synarthrodial articulation with the ridge is the cause of the cartilaginous covering found upon bony crests and ledges when they are sawed off. It is my experience that almost all bony and cartilaginous ledges and crests are merely the horizontal angle of deflections in the naris of the convexity.

The effect of the tilting over of the synarthrosis between cartilage and ridge, together with the broadening of the articulation, is to place the sharp horizontal angle or crest of the deflection in the naris of the convexity at a decidedly lower level than the groove of the concavity in the other nostril (Fig. 2^{3s}). For this reason, even after the cartilaginous deflection, including the cartilaginous overlapping described, has been entirely extirpated, the groove of the concavity will nevertheless be found to persist until, in addition to the cartilage, the deflected ridge, together with its tilted articular surface, is cut away to the bottom. Only when this has been done will the groove of the concavity be found effaced. It is my experience that, until it be effaced, the obstructed naris of the convexity will not have been sufficiently freed to insure perfect breathing after the healing is complete. Very often the horizontal angle or crest of the deflection lies so near the nasal floor that it is overlooked, unless the operator heed the indication of its presence given by the persisting groove of the concavity higher up in the other nostril. If he find the groove present, he should seek for and resect the concealed ridge.

The displacement of the cartilage and ridge and the consequent overlapping of the ridge by the cartilage almost always take place in the naris of the convexity of the deflection; but I have found a few instances where the overlapping occurred in that of the concavity, the cartilage, in forcing over the ridge, tilting its synarthrodial junction with it into the opposite nostril (Fig. 2^{4}).

It is obvious that the placing of the cartilage beside the bone in the overlapping process doubles the thickness of the septum. This, of course, adds much to the occlusion produced by the deflection and explains the extraordinary benefit of the submucous resection, which removes all this thickness, as compared to the fracturing operations, which leave it.

The overlapping of the cartilage, unless understood, is confusing; for the operator, expecting to find the yielding mucosa of the opposite naris underneath the cartilaginous deviation after its removal, is surprised when confronted by the resistance of the invisible bony wall of the ridge, hidden in its envelope of periosteum. The resection of this hidden bone may seem so difficult as to tempt him to leave it intact, to the detriment of his patient.

The arrangement of the periosteum and the perichondrium do not form a continuous sheet of membrane upon one side of the septum only, like a paper on a wall, but both the ridge and the cartilage have their own periosteal and perichondrial envelopes, the periosteum of one side of the ridge thus crossing over its top into the other nostril, while the perichondrium forms a separate compartment for the cartilage which envelops its lower border, thus making the perichondrium also continuous from one nostril into the other (Fig. 2). The envelope of the ridge and that of the cartilage are, however, joined to each other externally where they are in contact, and are covered by a continuous sheet of mucous membrane. On account of this arrangement of the two envelopes described, the elevation of the covering of one side of the septum may often be easily made with a dull elevator as far downward as the cartilage extends, but becomes impossible below this without a keen blade, because the bottom of the envelope of the cartilage has been reached, and that of the ridge has not been opened. To persist with the blunt elevator in this region results in tearing the coverings of the septum along its bottom.

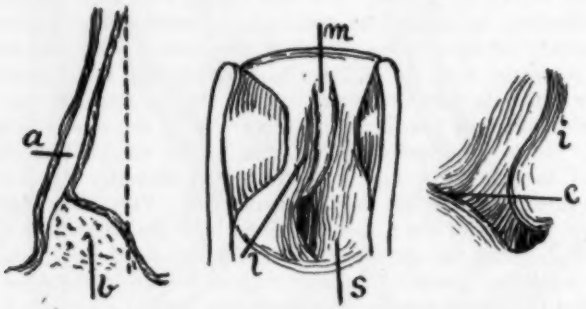

Fig. 3.—A, cartilage of the septum laterally attached to ridge, b, which does not overhang. The dotted line shows median position the septum should occupy after the resection; i, inferior turbinated body; m, middle turbinate; s, vertical wall of ridge in narrowed naris; c, groove of concavity in open naris; i, inferior turbinate.

While a deflected ridge almost always arches over and overhangs the nasal floor, this overhanging may be absent and the hollow space under the bent over ridge may be filled out, so that on the convex side of the deflection the ridge forms a straight wall, and yet shows the usual leaning over in the naris of the concavity (Fig. 3[b]). A ridge of this kind is wedge-shaped, and of great breadth at its base, thus depriving the bottom of the naris of the convexity of a great part of its normal width. The condition is a very confusing one; for, while the naris of the concavity presents the usual horizontal groove, or hollow, seen in a deflection involving the ridge, there is no evidence of the deflection in the form of an angle in the other nostril, which seems very narrow, but has a straight bony septum. Ridges of this kind must be extirpated to the very bottom in order to create a naris of normal width. A peculiarity, the opposite of a deflected ridge which does not overhang at all, is found in a ridge which leans over so excessively that it lies almost flat upon the

nasal floor, so that the side which comes uppermost may even be taken for the bottom of the naris.

While the ridge is commonly buried in tough, thick, firm, adherent periosteum, the posterior part of the bony deflection, formed by the junction of the vomer and perpendicular plate of the ethmoid bone, is usually easy to denude of its coverings. This posterior part forms a horizontal angle, which I have called the horizontal bony V (Fig. 4^c, 5^c), whose apex projects into the naris of the convexity toward the lower turbinated body, sometimes pressing firmly into it. It is this angle which is so often sawed away as a "spur." The upper plane of the angle is created by the bent out perpendicular plate, and below this usually by the broad rough articular surface of the displaced osseocartilaginous synarthrosis

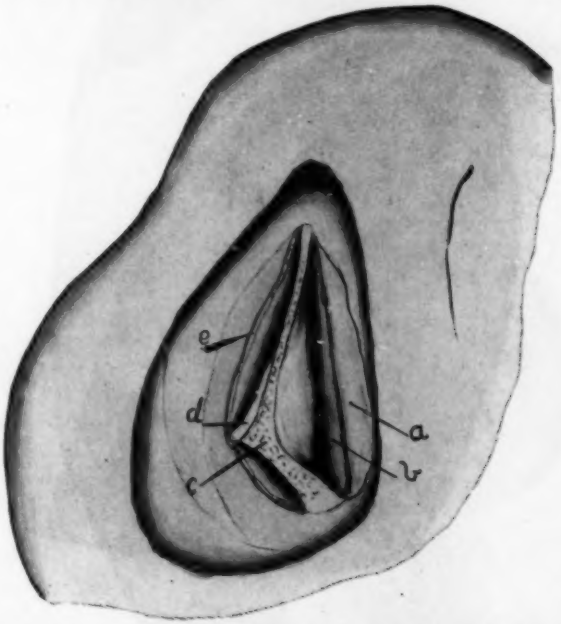

Fig. 4.—View of the horizontal bony V, or angle of deflection, pressing into the right inferior turbinate; a, anterior reversed L flap; b, inner surface of mucous covering of the concavity; c, the bony V; d, overlapping portion of the cartilage of the septum extending backward upon the side of the vomer as a cartilaginous strip; e, detached portion of the mucosa of the convexity, which lies behind the L shaped flap.

alluded to, while the lower plane of the angle is created by the portion of the vomer arching over below the articular surface (Fig. 4). Attached to the rough articular surface, and following the side of the vomer, often far back toward its posterior border, is the continuation backward of the overlapping portion of the cartilage of the septum, which appears in the form of a long strip indented on the surface which is united to the bone (Fig. 4^d).

Instead of forming the acute angle of a horizontal V, the posterior part of the bony deflection may appear bowed, as a vertical capital C.

Fig. 5.—Horizontal bony V, c, denuded ready for cutting away.

The bone of the V or the C may be very thick and strong in front, but usually, some distance behind, the operator comes upon very thin paper-like bone into which the V merges.

The perpendicular plate of the ethmoid bone may be vertical in front and deviated only where it joins the vomer in the V. Not rarely, however, the deflection of the perpendicular plate extends far to the front, so that it projects outward into the middle meatus and against the middle turbinated bone, along its whole length.

Unusual thickness of the bony parts of the septum may cause quite as much obstruction to breathing as their deflection. I have encountered ridges three-eighths of an inch, and perpendicular plates three-sixteenths

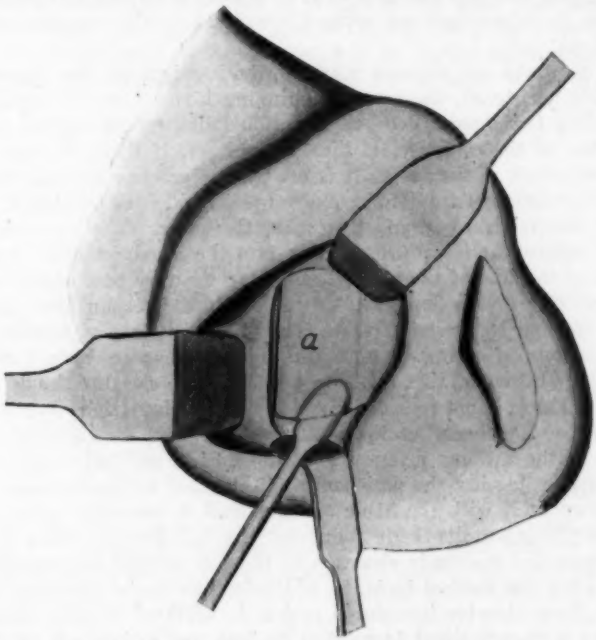

Fig. 6.—The right nostril held open with retractors. The reversed L flap, a, is being elevated from the cartilage from its bottom with the roundbladed knife.

of an inch, in thickness. Even if straight, a very broad ridge should, therefore, be taken away, as after the resection of the cartilage it supports nothing, and its removal gives great space.

The proportionate area occupied by the cartilage and bone in a septum varies greatly. In some rare cases the septum is almost entirely of bone, the ridge rising to a great height above the nasal floor, the large perpendicular plate descending low, and the anterior border of the vomer being steep and coming far forward. The converse of this condition is presented by other septa, less rare, where the cartilage occupies an unusually large area, the margins of its bony frame receding before it,

so that the anterior border of the vomer is found far back in the naris, and the perpendicular plate high up, while the ridge may be scarcely indicated. Only the typical anatomic peculiarities of bony deflections have been mentioned here, the many unusual ones found in a larger series of cases not being described. The latter, however, all show in some measure their relation to the typical conditions.

The Resection of Bony Deflections.—The surgical description in this article presupposes the completed resection of the cartilaginous portion of the deflection and the use of the author's reversed L mucosa-perichondrium flap, which gives a free access to the field of operation. While foreign to the subject of this paper, the difficulty others have had in uplifting this flap makes a word in regard to its creation seem advisable, as its advantages are especially evident in the resection of bony deflections.

As shown in my previous writings, the incisions for the flap are vertical and horizontal, the vertical beginning high up on the septum and descending to the nasal floor, this incision following the vertical angle of deflection of the cartilage, if there be one, or, if there be none, being made well back in the nose. It is my present practice to make the horizontal incision first, uplift the mucosa-perichondrium through it to the site for the vertical cut, and then make the latter. The horizontal incision is carried well forward, usually into the nasal vestibule, from the bottom of the line of the vertical cut along the very base of the septum. The uplifting of the flap (Fig. 6[a]) so outlined is begun from the horizontal incision by means of keen, round-bladed knives of suitable form, found in my set of instruments; for the coverings are always adherent along the bottom of the septum, so that a dull elevator should not be used. Often it is not possible to uplift the perichondrium together with the mucous membrane at the bottom of the flap, and in this event a corner of the mucous membrane of the flap is uplifted alone at first. This exposes to view the perichondrium attached to the cartilage, which is then outlined with the blade and detached to the same extent as the mucosa. This permits the introduction of a dull elevator under the perichondrium and the ready elevation of the flap upward and backward to the site for the vertical incision, which is then made, from underneath with a sharp elevator introduced under the elevated mucous membrane. The flap is then uplifted forward to its base, and so held out of the way with one of my retractors used by an assistant, who, with another retractor, pulls the wing of the nose outward. A third retractor, held by the operator, opens the nostril downward, the three acting as a trivalve speculum, as shown in the illustration (Fig. 6).

After the resection of the cartilaginous deflection its remains, clinging to the ridge along the bottom of the septum, are to be pared away with the thin spatula blade of a sharp elevator, in order to expose to view all of the periosteum of the ridge on the side of the convexity. The cartilaginous strip described as extending backward upon the rough articular bony surface of the osseocartilaginous synarthrosis upon the side of the vomer must also be freed from its attachments and removed. For this purpose a long, sharp elevator is used to separate the cartilage from

the bone, and also to cut around the outer surface of the cartilage, to detach it from the mucous membrane of the convex side of the deflection, to which it is usually firmly united, a dull elevator being rarely able to free it. When disconnected from its surroundings, the cartilaginous strip may be drawn out with dressing forceps. It often extends very far back, and its removal may require patience.

The next step in the operation is to find the concealed ridge by feeling for it through its periosteum with a dull elevator, palpating with this upward from the floor of the nose until the position of the upper border of the ridge is made evident and outlined by the elastic yielding of the mucous covering of the side of the concavity of the deflection above it. The line of the upper border of the ridge having been thus determined, a cut following it is made down upon it from above to the bone (Fig. 7) with the round-bladed knife E of my set of septum instruments (Fig. 8[e]). This splits the periosteum along the whole length of the top of the

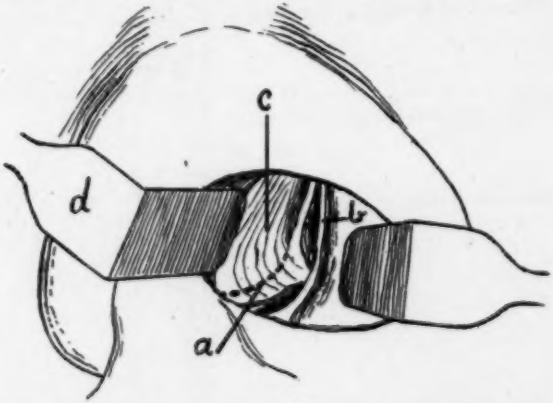

Fig. 7.—The left nostril is held open with retractors. Ridge, a, concealed in its envelope of periosteum; the dotted line shows the incision which splits the periosteum along the upper border of the ridge; b, cut edge of the uplifted mucous covering of the posterior part of the deflection; c, perichondrial surface of the mucous covering of the opposite nostril (naris of the concavity of the deflection); d, retractor holding forward the anterior (reversed L) flap.

ridge. The periosteum in the naris of the convexity is then pushed away from the ridge down to the nasal floor with a little raspatory (Fig. 8) whose blade is curved on the flat. This instrument is described in *The Journal* of the American Medical Association, Dec. 4, 1909.

When this instrument has detached the periosteum from the side of the convexity of the ridge, it is directed backward along the base of the septum in order to denude upon the same side the lower plane of the convexity of the horizontal angle of the bony deflection, or V, this lower plane being represented by the deflected vomer overlying the nasal floor.

The next step is the detachment of the periosteum from the ridge and V on the side of the naris of the concavity. This must be done cautiously, for it is this portion of a submucous resection which in my experience is the most apt to create a perforation, the penetration into

the other nostril occurring unexpectedly somewhere along the top of the ridge. Since employing the raspatory mentioned I have been able to avoid this type of perforation entirely, and I regard this implement as a safeguard against the accident. In order to bare the side of the ridge in the naris of the concavity (other nostril) the raspatory, held firmly close to its cutting end, that it may not slip, is made to progress cautiously over the top of the ridge and down its other side to the floor of the nose, the cutting edge hugging the bone (Fig. 9). The operator may always know from his sense of touch that he is maintaining bony contact, and, so long as he feels it, he may be sure that no perforation can occur. The raspatory climbs over and down the other side of the ridge in a direction which crosses it as nearly as possible at right angles. When the ridge has been thus denuded upon both sides, and lies bared to view, the raspatory is directed backward into the hollow of the bony

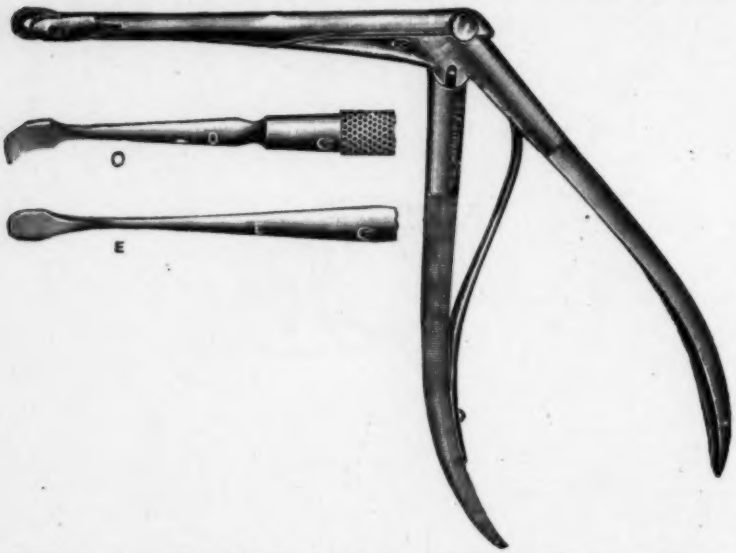

Fig. 8.—E, roundbladed knife, for splitting periosteum along top of ridge; o, raspatory, for denuding ridge; reinforced Freer-Gruenwald forceps.

V and the usually easy denudation of its concavity is completed. When the entire bony deviation seems detached from its coverings and ready for removal, the denudation should be carefully revised with the raspatory and a dull elevator, in order to make sure that there are no regions where the coverings are still adherent. Such places are especially apt to exist near the nasal floor on the side of the concavity of the deviation and, if overlooked, generally lead to the tearing out of the attached piece of mucosa, and a perforation, when the bone is removed.

The open view of the operative field offered by the reversed L flap, recommended by me, makes the freeing of the bony deflection under the guidance of vision possible everywhere, except along the bottom of the

ridge on the side of the concavity, and this perfect inspection of the line of advancing denudation is the best safeguard against tears and perforations.

While the periosteum of the ridge is, with rare exceptions, intimately united to it, that in the hollow of the bony V is generally easy to uplift.

For the removal of the bone I employ the reinforced Freer-Gruenwald forceps (Fig. 8), described by me in previous articles, and the small chisel of my set of septum instruments. Many of the chisels suggested for the resection of the bone are too large, hence obstructing the view during their use, and their excess in width makes them liable to cut through the mucous coverings beyond the limit of the bony cut they are making. A V-shape for the chisel blade is unnecessary, as the simple flat blade may be better controlled, may be kept sharp, and requires less propelling force.

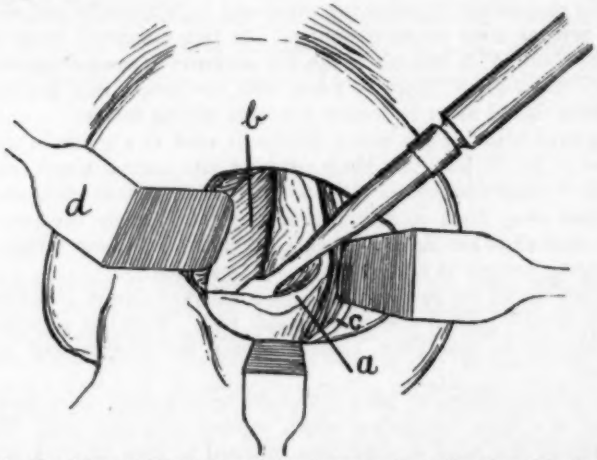

Fig. 9.—The left nostril held open with retractors; the entire bony deflection including the ridge, a, has been bared of its covering by the raspatory, which may be seen working towards the nasal floor on the concave side of the deflection; b, mucous membrane of the opposite nostril uncovered by the removal of the cartilage and uplifted from the bony deflection; c, cut edge of the uplifted covering of the posterior part of the deflection held away with a long retractor; d, retractor holding forward the anterior (reversed L) flap.

Since I have reinforced the forceps I have never met with bone in the septum which it will not cut through with ease, the thickest I have used it upon being three-eighths of an inch thick.

The removal of the ridge I now always begin with the chisel, cutting along the floor of the nose through the incisor crest and back under the vomer almost, or quite, as far as it has no bony connection with the perpendicular plate above. Then by lifting the shank of the chisel the undercut fragment of bone breaks off at the rearmost end of the cut. In this manner all of the deflected or thickened ridge, as far back as the bony V, is taken out in one piece. I know that the chisel is also used back of this anterior portion of the bony septum to detach the bony V above and below, this detachment being followed by breaking out of the

thus partly severed fragment with dressing forceps. But I regard this as a dangerous practice. The frail perpendicular plate in this portion of the bony septum is liable to be shattered by the chisel, and far-reaching fissures may be created by the breaking away of the fragment still attached behind. That this is no imaginary danger is shown by a case related to me by Professor Bernard Fränkel and Professor Edmund Meyer, of the Charité Clinic, in Berlin, in which blindness of one eye followed the breaking out of such a fragment in a submucous resection, a fissure having evidently traversed the sphenoidal sinus into the optic foramen. In another instance, of which Professor Koschier, of Vienna, told me, the entire vomer was twisted out of the nose. It is permissible, in my judgment, to break out fragments of bone posterior to the junction of the vomer and perpendicular plate if the bony V has been completely severed from its connections above by means of the punch forceps, and when the thus partly detached bone is found to be movable and obviously almost severed from its surroundings. In this manner I often remove the entire bony V in one piece. In the majority of cases, however, it is easy to cut out the V, piece by piece, with the punch, in a few minutes. Firm bone should never be broken out with seizing forceps.

The fixed blade of the punch forceps is used as a guide in applying the forceps for its bite, this blade entering into narrow places, as where the bony V described presses into the inferior turbinated body, and must be wedged away from it with the forceps blade before the instrument may be applied to the bone. For this reason I regard both a right and a left opening forceps as a necessity in the operation.

Deflections of the perpendicular plate outward should be followed as high up as they extend toward the nasal roof. They are easy to excise with the punch, and their removal clears the middle and superior meatuses.

The actual excision of bony deviations seldom takes more than a few minutes; it is their denudation which requires time and care. The cutting away of the ridge is sometimes followed by free bleeding from the cut vessels of the bone. In all but rare cases, however, the hemorrhage during even the most extensive bony resections is insignificant and sometimes almost absent. Bleeding hiding the field of operation is best controlled by an application of the flake crystals of pure cocain, on a swab moistened with adrenalin, according to the method I employ for the local anesthesia.

In men the ridge is often very broad and thick, and strong blows of the mallet may be needed to chisel it away. The angle of the V and the perpendicular plate may also be very thick; but after these parts have been removed a thin, egg-shell-like continuation of the deflection is usually found in the posterior part of the vomer which may generally be taken away by twisting it out with dressing forceps.

When all the bony deviation seems cut away, the flaps are to be replaced. If they lie down flat, the resection is complete; if not, the projecting fragment hiding them away must be sought for and removed.

I have never known harm to result from even extensive resections of the bone of the septum, and have never felt the need of inserting pieces

of cartilage between the replaced coverings in order to stiffen the partition. In concluding this article, I advise a complete extirpation of bony deflections to prevent the disappointment following an incomplete resection. For the after-treatment I refer to my other articles on this subject. Much of what I have written here concerning the removal of bony deflections represents my later technic, and is not to be found in my previous publications.

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THE SEPTAL SPUR AND ITS REMOVAL.*

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In maintaining or restoring the patulency of the nasal passages, one often has to carefully consider whether to attack the outer or median wall. The conscientious operator hesitates to remove the lower turbinate or to trim it too closely. Cauterization will not avail in those cases where the normal swelling of the turbinate occludes the passage. In such cases it is a question of septum only to be altered. Now that we have an operation adequate to all forms of septal deviation, the submucous resection of the septum is indicated in all marked deflections of the septum which offer obstruction to the passage.

But in a certain number of cases a ridge or spur on the septum projects enough to cause obstruction when the turbinate becomes engorged. In this class of cases the proper removal of the spur will give adequate relief without any interference with the proper physiology of the nose.

The great frequency of the septal spur is due to the complexity of the septum in its development. Beginning in earliest fetal life as a cartilaginous septum, about the third month two centers of ossification appear low down posteriorly, which form two plates of bone. These unite posteriorly and form the posterior end of the vomer, while its anterior edge forms a groove into which fits the cartilaginous part of the septum. As ossification advances, the edges of these two plates of the vomer coalesce and include in a canal a strip of cartilage. Farther forward the anterior lower point of the vomer is separated from the spina nasalis

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* Read at the meeting of the Chicago Laryngological and Otological Society, Dec. 14, 1909. For discussion see page —.

anterior by an interval, which is filled in by two small lamellæ of bone, which form a groove, in which the quadrangular cartilage rests. These two lamellæ either join the two plates of the vomer, or contain them in the groove. In addition to this prevomer bone, there is on each side of the septum just behind the anterior nasal spine, a small cartilage called the cartilage of Huschke. This contains a small blind duct and is the rudimentary remains of a cartilaginous capsule of Jacobson's organ, which in some animals is well developed. At birth the perpendicular plate of the ethmoid is a mere bony ledge, which gradually ossifies downward, but so slowly that even at the fifth year there is a strip of cartilage separating it from the vomer. Not until the ninth year is it firmly welded to the vomer.

On account of these various relations of the parts of the septum do we meet with spurs so often and at fairly constant positions. Broadly speaking, they are found running upward and backward from the anterior nasal spine toward the rostrum of the sphenoid. Those anteriorly are low down, often resting on the floor of the nose, and are apt to be bilateral. If an enlargement of Huschke's cartilage, it is found just back of the nasal spine. It is entirely surrounded by connective tissue and outside of the periosteum of the prevomer and vomer. Very frequently the quadrangular cartilage fails to rest in the groove of the prevomer or vomer, and then we find its lower edge projecting into one naris and a bony ledge or spur in a corresponding position in the other naris. But the spur most frequently met with is where there is a dehiscence of one side or the other of the canal in the upper edge of the vomer. This causes the contained strip of cartilage to lie outside of and parallel to the cartilago-vomer junction. It often extends nearly to the sphenoid. Frequently it lies in a groove on a knuckle of bone at the angle where the perpendicular plate, vomer and cartilage meet, so that its posterior end is sharply terminated. In this class of cases there is always a sharp angular concavity, shallow but well marked, on the opposite side. Hence a spur in this situation can obstruct both the inferior and middle meatus at the same time.

Unquestionably, many spurs increase in height and breadth from a low-grade inflammation of the overlying perichondrium or periosteum. This is due to the constant irritation of the inspired air or the pressure of the adjoining turbinate. On the edges of the spur in these cases the mucosa atrophies and becomes very thin. The corresponding pressure on the turbinate often furrows it and in time forces the middle turbinate so far toward the outer wall that the drainage of those sinuses which empty into the middle meatus is so interfered with that a sinusitis is more apt to occur.

Hitherto most operators have been accustomed to remove the nasal spur with a saw. But the day of the saw has passed, as has that of the tonsillotome. And why? Principally for two reasons: First, that it destroys the mucous membrane, and second, that it does not in most cases leave a smooth septal wall. It is most imperative that in all operations on the septum the mucous membrane must be left intact, as far as possible. Wherever there is a substitution of scar tissue there is always a

continual formation of dried secretions on that area with all its attendant annoyance from blocking of the passage and tendency to bleeding. The nearer this area is to the anterior naris the more the crusting and discomfort. When a saw is used to remove a spur it necessarily removes the overlying mucosa and lacerates neighboring parts.

In the second place, the saw can only at best remove the spur flush with the septal wall, and in the healing process such a thickening occurs that often almost a new spur is present when final healing is complete. This is a fact that anyone who honestly reviews his work with the saw will have to admit. In order to overcome this thickening process of healing, it is necessary to replace the line of the spur with a groove, so that final healing may produce a flat surface. While this is often attempted with a saw, it is rarely successful.

In order to provide against loss of mucosa and at the same time secure a flat septal surface, I have in recent years employed the following technic: A semilunar incision is made just anterior to the spur and at right angles to it, through the mucosa and perichondrium. Through this incision the soft parts are elevated over the entire spur, the same as one proceeds in a submucous resection of the septum for deviation. A chisel is then employed to cleave the spur from its base, and finally the spur is withdrawn through the first and only cut. The mucosa is then pressed flat and held in place by a Simpson nasal tampon. In case one has to deal with an extra large spur where there would be an excess of mucosa, so that when applied to the septal base wrinkling would occur, it is best to make a horizonal cut along the lower edge of the mucosa which has been elevated, and trim off a strip so that it will fit accurately and leave no raw surface.

The choice of a proper chisel is of extreme importance. The one I have found best adapted to the purpose is the Hajek spur chisel. This is curved on the flat like a gouge, so that it leaves a concave groove when the spur is removed; its end is recessed in a V shape with the two points slightly rounded. This enables one to hold the chisel to the direction intended and so prevents slipping laterally. There are three different breadths in a set, which fit into a handle at right angles to the shank of the chisel, and so one has better control, while the hand is not in the line of vision while directing the chisel. I would call attention to the fact that the Hajek chisels usually found in the shops are coarse and clumsy and ill adapted for the purpose. Referring to that class of spurs I have described where they surmount a slight deflection of the septum and there is an angular concavity, I have found that in order to attain a perfect result, it is necessary to remove the entire thickness of the bony parts affected. This under ordinary conditions would entail a regular submucous resection. I believe I have surmounted this necessity by carrying the spur operation one step farther. Choosing a chisel that will completely span the width of the spur, following the elevation of the mucosa, I introduce it at the anterior end of the spur. Driving it backward, at the same time I direct it on a slant through the septum. As it emerges on the opposite side, watching it meantime through this side with the eye, it acts as an elevator of the mucosa of the concavity as far

as the end of the groove or spur. I then direct it back again through the septal wall. Upon withdrawing the spur it is seen that the whole thickness of the bony septum is included with the spur. Should the width of the base be too wide to easily handle with one gouge of the chisel, I use a narrower one, and sever first the upper and then the lower edge, when the entire spur can be withdrawn intact.

This operation virtually makes a modified submucous resection operation, but one so simple that it requires but a few minutes; while at the same time it gives a perfect result as to a smooth septal wall and complete preservation of the mucous membrane. Another result not to be lost sight of is that healing is complete in a few days. No prolonged after-treatment with its annoying discharge and liability of complications. While this technic requires more surgical dexterity than does the use of the saw, the results justify the exertion. And while only for a spur, yet if that spur causes sufficient symptoms to be removed, it should be removed right.

103 State Street.

THE RECENT USE OF STOVAIN IN CHICAGO.*

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It is not my purpose to write a complete treatise on spinal anesthesia, nor indeed, to go deeply into the subject of stovain as a spinal anesthetic. The names of Corning, Bier, Gauss, Hofmeier, Jonnescu and a host of others will recur to your minds, marking epochs in the history of the subject. In the days when cocain was new and therefore wonderful, it was employed freely as a local anesthetic until its frequent baneful effects began to be understood. Because it has baneful effects (and what drug has not?) we are not therefore minded to throw over cocain, but still recognize it as a valuable weapon in proper hands and under proper circumstances. Cocain was used in fairly concentrated solutions for local anesthesia in minor operations and, in weak solutions according to the method of Schleich, even for major work, such as laparotomies. In this way it acted upon the peripheral nerves in the actual region under the knife. Later it was used by injecting around the main trunk of a nerve to cut off sensation in the parts supplied thereby. From that it rationally followed that it would be considered as a means of cutting off all sensation in the lower part of the body by being injected in or near the spinal canal. As a matter of fact, injection into the tissues outside the dura is so uncertain in producing anesthesia that it is necessary to inject the drug actually into the spinal canal where it mixes with the cerebrospinal fluid. For this subdural or so-called subarachnoidal injection cocain was employed at first. In doses sufficient to obtain the effect desired its toxic effects often became too apparent. Therefore the substitutes for cocain which have been discovered or invented in recent years, such as eucain, novocain,

* Read before the Chicago Medical Society, Feb. 9, 1910.

tropocain and stovain, have been and still are being injected for spinal anesthesia. The literature of the continent of Europe and to some extent British literature teem with reports and articles dealing with these subjects. To combat the depressing effects of these drugs various other drugs have been recommended for incorporation into the solution. Some of these were intended to correct the depression and toxic influence on the heart and others to control the specific gravity of the solution. Chief among them are adrenalin, glucose and strychnin. Jonnescu employed strychnin as the corrective drug. He also perfected the technic of injection and worked out the proper dosage and proper dilution.

Up to the advent of Jonnescu in this country I must confess that I had been rather indifferent to the whole subject of spinal anesthesia and stovain, being lazily content with ether, chloroform and gas for general anesthetics. When Jonnescu came to Chicago I was asked by some members of the Chicago Surgical Society who were on the surgical staff of the County Hospital, to operate on some of my cases before a clinic arranged by that society in the amphitheater of the hospital. It so happened that Tuesday was regular operating day for Dr. G. F. Thompson and myself. As the clinic fell on our day, we were asked to submit our cases before it. Dr. Thompson had two cases and I had two. One of my cases was a woman suffering from the effects of a retroverted and adherent uterus upon whom I intended to perform an abdominal operation for shortening of the round ligaments. By misunderstanding of orders in the ward, this patient received the usual routine hypodermic of morphin and atropin before coming to the operating room. When this circumstance was communicated to Jonnescu he refused to inject the stovain solution. His colleague, Jianu, informed me that he feared the action of four powerful alkaloids, and that in addition their experience had been that patients who had received morphin did not obtain as complete or lasting anesthesia. My second case was a man who had frozen all his toes several weeks before and suffered from gangrene in consequence. His toes were amputated and his is the first of the cases which I report to-night.

Case 1.—A. H., aged about 30 years, case number 411,518, admitted Nov. 26, 1909, gave a history of having frozen his toes while spending the night in a freight car during a Dakota blizzard some week or two before entrance. A superficial gangrene involved all the toes of both feet. When the sloughs came off all the skin and much of the deeper tissue were gone and granulations covered the digits. Therefore amputation of all the affected toes was decided upon in order to give the man useful feet.

The operation was performed in the clinical amphitheater of the hospital, Dec. 21, 1909. A solution of stovain and strychnin was injected into the space between the twelfth dorsal and first lumbar vertebræ by Prof. Jonnescu. In seven minutes I began amputating, making skin incisions of course through normal integument. The patient did not experience the slightest discomfort but talked and joked with the assistants while his toes were falling on the floor. The only after effect was a slight evanescent headache. He slept well that night and rapidly recovered.

Case 2.—L. P., aged 35 years, entered the hospital Jan. 6, 1910, for an inguinal hernia. He was operated on by the Andrews method, Jan. 7, 1910. A solution furnished by the hospital pharmacy and consisting of stovain gr. 1½, strychnin sulphate gr. 1/60 in two centimeters of sterile water was injected between the last dorsal and first lumbar vertebræ. The anesthesia lasted forty minutes in spite of

the fact that he had received one-quarter of a grain of morphin half an hour before the operation. He was able to move his feet within twenty minutes. He made no complaint and lay perfectly still throughout the operation, but when asked in Polish whether it hurt replied very cheerfully in the affirmative. His only trouble was a very slight headache lasting less than twenty-four hours and not enough to prevent his sleep. He also complained of some pain at the wound. He was discharged well, Jan. 20, 1910.

CASE 3.—F. W., aged 21 years, No. 414,726, was admitted to the hospital, Jan. 10, 1910, for double inguinal hernia. He was operated on in my regular Wednesday afternoon clinic, Jan. 12, 1910, in the amphitheater. The same injection was made in the same locality as in the others. Operation was begun five minutes after the injection. Patient experienced absolutely no pain or discomfort during the Bassini operation on each side. He slept that night after midnight. His pulse just after reaching the ward was 92, temperature 99 and respiration 28. Next morning all were normal. He left the hospital in about two weeks perfectly well.

CASE 4.—J. R., aged 60 years, entered the hospital Jan. 9, 1910, suffering from a fracture of the left patella just incurred. The examining room diagnosis was fracture of the patella and alcoholism. He gave a history of living in cheap lodging houses and using much alcohol. The nurse entered in her notes when he came into the ward that he came in on a stretcher, cold and intoxicated, with pulse weak and mucous râles in the trachea. External heat was applied and the man put to bed. Hot applications were kept at the seat of fracture. There was a large amount of fluid felt in the knee joint and the patellar fragments were separated about two inches. It was decided to suture the patella after emptying the joint.

The operation was done in clinic directly after the operation on Case 3. Before going to the operating room the pulse was 90, temperature 99 and respiration 20. He appeared to be in fair condition. He certainly seemed, on account of his age and history, to be a bad case for ether narcosis. Stovain was injected in the same strength and in the same manner as in the other cases. Within about four minutes after injection he was unable to move his feet and felt no sensation at the seat of fracture. A longitudinal incision was made over the left patella opening the joint. About half a pint of fluid blood and clots was cleared out of the cavity. The fragments of the patella were united by sutures of kangaroo tendon. At this point, about fifteen minutes after the injection, the patient said he was drowsy. The operation was rapidly completed. In a few minutes after the drowsy symptoms his respirations began to fail and the heart to weaken so that the radial pulse could not be felt. Artificial respiration was maintained for several minutes as the dressing was being put on and the respiration and heart action gradually returned. The pulse at the wrist became very full and slow, about 60 to the minute and the respirations became apparently normal. He was returned to the ward. In about ten minutes he began to have clonic convulsive movements of the arms and hands, followed by athetoid movements. He became restless, talked incoherently and shouted wildly, moving his arms about in purposeless motions and even moving his legs a little. About half an hour after leaving the operating room he again began to fail in pulse and respiration and died in spite of renewed efforts at artificial respiration.

Since his death was caused indirectly from the accident of falling and fracturing his patella, he became a coroner's case and therefore an autopsy by the hospital pathologist was not permitted. One was performed by the coroner's physician in the usual course. Although the coroner's office was notified at once of the circumstances of the death and a request made for permission for myself or interns to witness the autopsy, through some error the coroner's physician was not informed of the fact that the man had received stovain until after he had performed the autopsy. The autopsy was performed two days after the death of the patient. The brain and cord were removed and examined four days later.

As to the autopsy findings I quote from a copy of the coroner's notes. "On inspection body presents punctured needle wound over twelfth dorsal vertebra.

On opening skull, brain negative; right and left lungs show considerable fibrous tissue here and there and some coal pigment, also superficial region of atelectasis. About apices are some areas of bulbous emphysema, otherwise lungs are not altered. Heart shows slight coronary sclerosis but no other changes. Spleen normal. Fracture of left patella, kidneys normal. Spinal cord vessels dilated. Stomach and intestines negative. In my opinion the said J. R. came to his death from anesthesia combined with external violence and old age."

The coroner's verdict was that the man "came to his death from anesthesia combined with external violence and old age, said external violence the result of an accidental fall when the deceased was in an intoxicated condition, the anesthetic administered consisting of stovain, gr. 1 1/2; strychnin sulphate, gr. 1/60; sterile water, m. xlv."

Here is a case of an old alcoholic who dies less than an hour after the administration of a spinal anesthetic given in order to operate upon a serious injury consisting of fracture of the patella with great trauma to the joint and parts adjacent. The autopsy, as we have its records, shows no other cause of death, and so the coroner's physician concludes that the anesthetic contributed to the death. The shock of the operation must itself have contributed or may even have been the sole cause. The condition of chronic alcoholism may have contributed or may even have been the sole cause. Will the brain of an alcoholic always show marked macroscopic changes, especially when the examination of the brain is made a week after death? Again, the question arises whether this patient would not have died following the administration of any other anesthetic. On the day following another patient died on the table in the same amphitheater while under the influence of ether. What are the post-mortem evidences of poisoning by stovain, by cocain, by morphin, by ether, by chloroform? I do not mean the chemical or possible microscopic evidences, but the gross appearances.

The fatal result of our one case alone does not speak against stovain nor against spinal anesthesia any more than our seven or eight favorable cases in the County Hospital speak in favor of these procedures. Patients will sometimes die during or shortly after operations from various causes. It is not always possible to determine the actual causes in individual cases. Patients died before anesthetics were used, they die when ether is used, they die when nitrous oxid is used, they die when the surgeon has red hair, they die when he has a bald head, they die when he has seen the new moon over his left shoulder. No one factor, such as this or that anesthetic, can be justly blamed without scientific evidence.

It will do no harm to recall that the patient selected for the first administration of chloroform in the Royal Infirmary at Edinburgh died immediately at the first stroke of the knife. Because of the absence of Simpson, chloroform had not been administered, and so the new drug was spared that body blow of a death at first trial. In the Samaritan Hospital in Philadelphia recently a child was brought to the operating room for operation, and it was intended to administer stovain. For some good reason operation was postponed. Within a day or two the child came down with epidemic cerebrospinal meningitis to which it had been exposed. If stovain had been used it would have been difficult to convince some

people that the meningitis was not the result of the injection into the subdural cavity.

If a much larger number of patients undergoing operations of the same average severity die under stovain than die under other anesthetics, and if such a series embraces thousands of cases, then we must blame stovain and should give it up unless we can find something to administer with it which will neutralize its evil effects.

So far the literature does not furnish such an indictment against stovain. Grimond and Baudet[1] report 141 cases of stovain anesthesia with no pathologic sequelæ, although in a number of cases there were headaches, in a few vomiting and in one diplopia which lasted ten days.

Auvray[2] reports 51 cases. He lets out a small quantity of cerebrospinal fluid, mixes it with his stovain to form a solution and injects it back again. He had no deaths. Once he had a case of syncope in a woman aged 77 years with an enormous ovarian cyst; once motor and sensory paresis of the lower half of the body for nearly a month but with complete ultimate recovery. Zweifel[3] reports its use for three years in Dresden with, in general, good results. He had no deaths caused by the anesthetic. Franz of Jena[4] in late years has used lumbar anesthesia almost exclusively, with one death, in a womnn aged 76 years with marked arteriosclerosis who succumbed after an operation for complete hysterectomy for cancer by the abdominal route.

Holzbach[5] reports on the value of spinal anesthesia for gynecologic operations. He bases his conclusions upon over 1,000 cases of lumbar anesthesia. For absolute freedom from pain during the whole operation he gives preference to general narcosis; he considers the relaxation of the muscles ideal under the spinal method; as to danger and post-operative discomfort he considers that the occurrence of trophic disturbances is to be conceded but that they may be hindered by right technique; as to influence of the anesthetic upon the post-operative outcome he concedes the greatest superiority to lumbar anesthesia.

Avarrfy of Budapest[6] reports 50 cases from the University Frauenklinik, 45 times for abdominal operations, nine of which were Werthein's hysterectomies for cancer of the cervix. Anesthesia failed completely twice; in one case there was failure of respiration which required ten minutes of artificial respiration to revive the patient; vomiting and temporary incontinence of feces were frequent. In general he is pleased with the results of the method. In these cases stovain was combined with adrenalin.

Engelhard of Utrecht[7] had experience with stovain in 100 cases. In 30 cases the anesthesia was not complete and small amounts of ether or chloroform were used. No patient had any lasting symptoms following the injection, although in one there were severe symptoms of collapse one and one-half hours afterwards. Borzéky[8] of Budapest reports 300 cases of stovain spinal anesthesia. Ninety per cent. had complete anesthesia; 4 cases showed severe respiratory symptoms; about one-third had some difficulty with the bladder; 60 cases were observed for about five months afterwards, and 5 of these had some weakness and paresthesia of the legs with dizziness and headaches. No deaths are recorded. He considers that the secret of the results is in the technique.

Münchmeyer[9] reports the use of stovain anesthesia in 1,000 cases. He is an enthusiastic friend of the method, and deems its dangers no more than those of general narcosis. In some instances he made several injections in the same patient in one week, even within three days, without bad results. Six pregnant

1. Grimond et Baudet: Provénce medical, 1907, No. 27.
2. Auvray: Gaz. med. des Hôpiteaux, 1908, No. 61.
3. Zweifel: Zentralbl. für Gynäk., 1900.
4. Franz: Ibid.
5. Holzbach: München. med. Wchnschr., 1908, No. 28.
6. Avarrfy: Orvosi Hetilap, 1907, No. 30.
7. Engelhard: Monatschr. f. Geburtsh. u. Gynäk., B. xxvii, H. 6, 1908.
8. Borzéky: Ibid.
9. Münchmeyer: Beitr. zur klin. Chir., B. lix, H. 2.

women and three diabetics took it well; a fourth diabetic died afterwards in coma, not as a result of the anesthetic. Twenty-one cases already albuminuric did well. Anesthesia failed in a little over 2 per cent. of the cases; 4.4 per cent. vomited during or after the operation; 8 cases had headache which diminished quickly after lumbar puncture. There were four deaths; one the diabetic already mentioned, one of respiratory failure in a case of lung disease (whether from inspiration of pus was not determined because no autopsy was permitted); two other cases from causes not related to the anesthetic. Göth[10] had experience with 72 cases using doses of 7-8 cg. stovain, mostly in Billon's ampoules. In 5 cases anesthesia failed; in nearly half the cases there was nausea, vomiting, heart symptoms, or headaches; in two cases death ensued shortly after the injection in spite of administration of oxygen and stimulants. These patients each had inoperable ovarian carcinoma with ascites enough to seriously impair respiration beforehand. The author recommends the method for operations other than short ones in which only a small amount of ether or chloroform would be required.

Pringle of Glasgow[11] remarks on the use of stovain in 100 cases. He is well pleased with the method. Four times there was considerable shock after the operation; nausea, vomiting, and headache were not severe nor frequent, although the patients seemed to complain afterwards of pain in the wound rather more than after general narcosis. There was one death, due to the condition of the patient and not to the anesthetic. Barker[12] reports on his clinical experience with stovain in 100 cases. Thirty-eight times he employed Chaput's formula which is: stovain 10 per cent., sterile salt 10 per cent., with a specific gravity of 1083 +. Once he used Bier's solution which is: stovain 4 per cent., salt 11 per cent., suprarenin 0.01 per cent., with a specific gravity of 1058. Sixty-one times he made use of a solution of his own devising which is: stovain 10 per cent., glucose 5 per cent., with a specific gravity of 1030. In his first 50 cases he failed to achieve complete anesthesia 11 times but not once in the second 50. In the 100 cases there were 3 deaths from other causes than the anesthetic.

Remenár, Budapest,[13] used stovain in 40 cases, tropocain in 36 and novocain in 4. In one case, that of a woman aged 72 years, operated on for inguinal hernia, slight symptoms of collapse occurred one hour after the operation under stovain. Otherwise there were no serious symptoms and no deaths. Headache yielded readily to aspirin. The patients were well relaxed and did not get excited. Skrobansky, a Russian,[14] reported 50 cases of spinal anesthesia, 25 with stovain (17 with addition of adrenalin) and 25 with tropocain. He thought that the anesthesia was more deep and lasting with the latter than with stovain. The after affects of both were much more favorable than with general narcosis, especially under chloroform.

Thorbecke[15] had 180 cases of spinal anesthesia, 107 of which were with stovain. In all the results were good. The Trendelenburg posture could safely be employed after ten minutes. Krecke[16] used stovain in 25 cases of various kinds of operations. Several of the patients had severe and many had slight headache after the operations. He had one death under the following circumstances: A man, aged 70 years, with an immense strangulated inguinal hernia and beginning signs of intestinal obstruction was operated on. The opening of the sac revealed gangrenous intestine. Just as the ring was being cut the patient collapsed and died shortly afterwards in spite of efforts. At the puncture the needle had withdrawn fluid stained red. No autopsy was permitted so that it cannot be certain that stovain caused this death. In the discussion Gebele[17] reported 47 cases of the use of stovain. Most of the patients had slight headache or backache and 6 vomited.

10. Göth: Gyógyászat, 1908, Nos. 38-40.
11. Pringle: Brit. Med. Jour., July 6, 1907.
12. Barker: Ibid.
13. Remenár: Wien. klin. Wchnschr., 1907, No. 43.
14. Skrobansky: J. akuksch e jentsch, 1907, 1-9.
15. Thorbecke: Monatschr. f. Geburtsh. u. Gynäk., xxv, 967.
16. Krecke: Ibid, 247.
17. Gebele: Ibid.

There were no permanent evil results. Hofmeier[18] reported 100 cases of stovain anesthesia, 60 of them for laparatomies and 40 for vaginal operations. There were no permanent bad results. Thirty required a little ether to complete the anesthesia; a few times there was slight temporary paresis of the eye muscles.

Jonnescu[19] reported 480 cases of use of stovain with strychnin. There were no deaths and no dangerous symptoms; headaches occurred in 9 per cent.; vomiting in 8 per cent.; pain in the back in 3 per cent. Duration of the anesthesia was from 1 to 1½ hours. Children seemed to take the anesthetic well. He mixes the stovain solution with the strychnin fresh before each injection.

Jonnescu[20] later reports on 783 cases of spinal anesthesia by his peculiar stovain solution done by himself or his hospital interns and assistants. None of them died from fright, shock or anything else. None showed any signs of puncture of the cord. As for abscess due to the injection into the spinal canal, none occurred in his cases. I may add that I have found no mention of abscess of the cord in a fairly wide review of the literature. Jonnescu says, "This may happen to a careless surgeon, who had better give up surgery."

Gauss of Freiburg[21] in his last 1,500 cases of stovain anesthesia with improved technique had no untoward results. He discusses Rehn's experiments on animals with the drug. Rehn thinks that the drug is disseminated throughout the spinal canal and cerebrum within half an hour on account of an active fluid current in the cerebrospinal cavities. Gauss contends that the anatomy of the spinal canal in man is much different from that of dogs and other animals on which Rehn experimented. The canals of dogs and monkeys are relatively much less capacious than those of men and contain relatively much less fluid. Therefore in a dog which has only 7 to 8 c.c. of fluid in all, if 1 or 2 c.c. of other fluid be added there is much more disturbance than in man with the same quantity of injection.

Gauss found that the specific gravity of the fluid injected had much to do with its dissemination. In experiments on the cadaver he found that, with the body in the sitting posture, the injection of a solution of stovain of high specific gravity caused the drug to reach only the lower portion of the subarachnoidal sac. On the contrary, a solution of low specific gravity was disseminated even to the brain. Stovain seems to have an affinity for living nervous tissues, less for dead. It becomes "anchored" in the cord itself, therefore less is left in the cerebrospinal fluid. He injects between the second and third lumbar vertebræ a heavy solution of stovain and, with the woman still in the sitting posture, punctured between the fourth and fifth vertebræ. The fluid drawn from the latter point in half a minute showed much less stovain than that from the higher puncture and in five minutes a very small amount. He recommends a solution of low specific gravity for operations above the pubes and one of high specific gravity for operations on the perineum and legs. Examinations by Spielmeyer in a man who had received a dose of 0.07 gr. of stovain showed no degenerating nerve changes.

Birnbaum[22] reports the history of a patient, aged 53 years, who was operated on for prolapsus uteri and died three days afterwards with severe cerebral symptoms. In life she showed little sign of arteriosclerosis, but on autopsy the vessels of the brain, both large and microscopic, showed extensive disease. There were also numerous soft areas in the substance of the hemispheres and fresh areas in the pons. The author concludes that a direct toxic action of the stovain on the brain tissue cannot be ruled out in addition to its vasomotor action.

Spinal anesthesia is not without its advocates in American literature. I quote from the preliminary report of the Anesthesia Commission of the American Medical Association:[23] "Spinal anesthesia is gaining constantly a broader and more favorable recognition. One of our collaborators

18. Hofmeier: Ibid, 566.
19. Jonnescu: Ref. in Zentralbl. f. Gynäk., 1908, 1438.
20. Jonnescu: Letter to Med. Times, February, 1910, p. 52.
21. Gauss: Zentralbl. f. Gynäk., 1909, p. 1070.
22. Birnbaum: München. med. Wchnschr., 1908, No. 9.
23. Anesthesia Commission A. M. A., 59th Session; Trans. Section on Surg. and Anat. A. M. A., 1908.

states: 'It is my belief that it has come to stay and will always, in certain cases, prove safer and more satisfactory than any general anesthetic which we now have. I have used it since 1900 in cases where I have seen a clear contraindication to both chloroform and ether, and I have as yet no occasion whatever to regret its use. In all, I have used it 150 times, and have statistics of more than 1,000 cases without a death. While my experience with cocain sterilized by the fractional method was entirely satisfactory, I have given it up for stovain, on account of theoretical considerations. We have had less post-operative nausea and headache with stovain. Every patient on whom spinal anesthesia has been used, with the exception of one, a diabetic aged nearly 80 years, whose leg I amputated, recovered. He died many days afterward in the usual way of diabetic coma.' "

The most favorable article I have found concerning spinal anesthesia is one by W. Wayne Babcock of Philadelphia.[24]

The work is based on 658 personal cases of the method, mostly with stovain. The ages of the patients varied from nine months to eighty-eight years; the operations were of many kinds, including 355 laparotomies, 20 operations on the kidneys and ureters, etc. In about 2 per cent. of the cases a small amount of ether or chloroform was needed. The author states that he uses spinal anesthesia because he believes it safer than ether or chloroform. He believes the mortality from ether and chloroform has been much underestimated. With these drugs the danger increases with the time and with the quantity. Long operations become more and more dangerous as the patient absorbs more and more of the drug by inhalation, while with stovain the danger is greatest at the beginning of absorption, afterwards diminishing as the drug becomes eliminated. Often the pulse at the end of operation is better and stronger than at the beginning. There is also greater quiet on the part of the patient and there is more complete muscular relaxation.

Babcock never injured the cord at least enough to cause any symptoms or physical signs; there were no cases of meningitis; nausea and vomiting were rare when the dose was less than 6 centigrams. In his 658 personal cases and over 200 cases under Steel[25] of the Samaritan Hospital in Philadelphia and other colleagues, amounting in all to nearly 900 cases, there were two deaths. One was a patient who came to the operating table moribund from typhoid perforation, and the other was a patient whose leg was amputated for extensive progressive gangrene.

Strauss[26] reports a series of 20,000 cases from German sources in which the rate of mortality was 1 in 2,524.

From the foregoing I think it will appear that the use of stovain by the spinal method for anesthesia in surgical operations in properly selected cases is not entirely indefensible. At least, it has been tried enough in other places and the results are promising enough, especially under the latest improved technic and with the latest improved preparations of the drug, to justify some of us here in Chicago who have fairly large surgical clinics in giving it a further trial. I think I have shown that stovain is not, as stated by Warren H. Hunter, coroner's physician of Cook county, a "medical gold brick" not used by "careful and conservative practitioners."[27] I think I have also shown that the mortality is not

24. Babcock: Pennsylvania Med. Jour., 1909, p. 891.
25. Steel: Ibid.
26. Strauss: Ref. Ibid.
27. Hunter: Chicago Daily Tribune, Jan. 16, 1910.

nearly as high as estimated by E. C. Dudley,[28] of Chicago, who states his belief that "it will produce a mortality of 2 per cent."

In contrast to the very public and decided opposition to stovain in Chicago, I ask permission to quote from an editorial in the *British Medical Journal*,[29] commenting upon the death of a house painter, aged 72 years, suffering from a very enlarged prostate, diseased heart and lungs, who died during an operation under stovain anesthesia: "No therapeutic agent capable of absolutely abolishing pain can ever be absolutely safe. In this case the safest of known local analgesics was properly chosen and sympathy is to be extended to Dr. MacCormac in the matter."

The unfortunate and ill-advised publicity attending the fatal case which I have reported will perhaps discourage further use of stovain in this city for a while. If so, it will be unfortunate. While I do not wish to be considered a partisan of stovain or of spinal anesthesia, yet I do wish to keep a receptive mind in the matter, and I would wish to be able to do my little part in attempting to prove by the only good test of such things—clinical experience—whether stovain is an anesthetic which the judgment of time will approve.

SOME ADVANCE IN THERAPEUTICS.*

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When one looks at the usual methods of treatment of many diseases a few years ago in the light of recent researches in physiology and physiologic chemistry, he is surprised both at the crudeness and empiricism of the methods, and the success of the treatment in many cases. It was a sort of hit-or-miss process, almost entirely empirical, but accompanied by keen observation, and, although almost nothing was known of the *modus operandi* of the remedy or the pathology of the disease, the fact that the remedy gave relief in one case caused its continued use in other like cases until it proved its worth or worthlessness. If every physician in these later days would watch closely and carefully every manifest effect of every remedy he uses and make his results and conclusions known without prejudice or favor, the power and certainty of curing disease would be tremendously increased. But what is the actual state of the case? Some physician, more enthusiastic than his fellows, or who may have unusual opportunities to attract the attention of the profession, gives extravagant praise to some remedy which he happened to give coincidently with the rapid recovery of his patient due to other causes. Immediately the item is caught up and published broadcast, and, although hundreds of physicians, by reason of that praise, have used the remedy and found it worthless, they do not take the trouble to tell of its failures, so the recommendation goes on and the remedy is probably included in the next work on materia medica and therapeu-

28. Dudley: Ibid, Jan. 18, 1910.
29. Editorial, Brit. Med. Jour., 1909, I, 362.
* Read before the Madison County Medical Society, Granite City, Ill., March 4, 1910.

tics without any careful examination, and becomes official simply from lack of interest in calling attention to its failures or limitations.

Then the remedy, if not already proprietary in some form, is taken up by some enterprising manufacturer and exploited for all it is worth (and generally much more). Therein lies the cause of much of the therapeutic nihilism of to-day. Physicians are themselves largely to blame for this. Why do we usually rely more implicitly on the recorded observations of English physicians as published in English journals than many of those published in our own country? Because entrance into the profession is more strictly guarded there than in almost any other country on the globe and physicians there are usually of a class that weigh carefully their conclusions before giving them to the public. Would that it were more so in this country. I fear that most of those whose opinions are valuable are too modest to give them unasked, thereby delaying real progress in therapeutics. Every physician finds it necessary to try dozens of new remedies, most of which prove to be worthless, thereby often losing valuable time and doing his patient great injustice. The "house organ" evil is one of the greatest obstacles to real therapeutic progress, although many of them claim to be devoted to that especial mission. Their cheapness, their testimonials from so-called prominent and well-known physicians (whose names are only known through such advertisements) and their pseudoscientific nomenclature unfortunately influence many physicians whose scientific attainments should be such as to enable them to detect the absurdity of their claims. In this connection I might say that the Council on Pharmacy and Chemistry of the A. M. A. is doing an excellent work in sifting out the absolutely fraudulent preparations, recognizing those which have any basis of truth as to their chemical composition and pharmaceutical identity, but by no means substantiating their therapeutic claims, with which the council has nothing whatever to do, leaving that entirely to the physician and pharmacologist.

A late copy of one of our drug journals gives a list of 127 drugs, most of them so-called synthetics (a few true synthetics, but most of them merely mixtures), which have appeared during the year 1909 with the favorable testimonials of supposedly reputable physicians and teachers. It is not at all likely that one-tenth of these will stand the test of time, and they do not represent by any means all that have been advertised. It is a well-known fact that the older physicians, those with large experience and close observation, have always gradually reduced their armamentarium until it comprises comparatively few remedies, and this should be a lesson to younger physicians who wish to attain professional success.

"Be not the first by whom the new is tried, nor yet the last to lay the old aside" is very good advice. It has been prophesied by one of Germany's most eminent teachers (Professor Tschirch) that when medical science has thoroughly ruined its digestion with synthetic remedies and tested all the organs of the human body it will return once more to medicinal plants and drugs and employ them to a greater extent than it does at present. I do not quite agree with Professor Tschirch that all

synthetics and all preparations of organs will eventually be abandoned, as I believe we have a few that have established their usefulness and possibly a few more that will find their proper places when physiologic chemistry has advanced far enough so that we may know their true action, and enthusiasm has so far subsided as to limit their use to their proper field. Empiricism must very largely control the adoption of new remedies for some time yet, as we have not reached a point where we can foretell with any degree of certainty what specific action a remedy may have by a knowledge of its chemical composition, although we are advancing in that direction with increasing rapidity. Within the last few years several colleges have established chairs devoted to pharmacodynamics, occupied by men whose business it is to study the effects of drugs and other remedial agencies, not only on the human system in health and disease, but also on lower animals for the sake of comparison and proof. A phenomenon viewed from two points often gives a more accurate perspective than from one alone. In this way many important contributions to our therapeutic knowledge have been made. The influence of the internal secretion of the pituitary body on the growth of bony tissue and the antagonistic effect of parathyroid secretion, the well-known vasoconstricting action of adrenalin (or epinephrin) and the less well-known opposite effect of thyroid secretion might be mentioned.

The researches now being carried on have given rise to numerous theories, but have established some facts which have an important bearing on the future of the practice of medicine. Serum therapy, for example, came as a direct result of reasoning on some of the principles and facts derived from chemical investigations. The principle was established that ferments were weakened and destroyed by the products of their own activity. Alcohol in a certain concentration weakens and destroys the yeast ferment which produces it. When the chemist discovers the actual composition of an antitoxin it will be a comparatively short step to its artificial production. It is almost within the memory of men now living that the first artificial production of a substance which was recognized as distinctly organic was accomplished. Now it is almost an every-day affair, but it is yet confined principally to the more or less stable products of plant life, but we are gradually and somewhat rapidly approaching the time when the more unstable and complex products of animal life will be understood and prepared. Alcohol is now produced artificially (synthetically) without the aid of the yeast ferment, although the process is too expensive to be a commercial success. An epinephrin is now made which has the astringent qualities of adrenalin, but not quite so powerful (about 1/10), as we have not been able yet to introduce the methyl radical in the proper position.

The exact composition of the proteid molecule has so far eluded the chemist, but we hope soon to conquer it. The researches of Ehrlich have shown that certain albuminoid principles of vegetable origin (ricin from castor bean and abrin from jequirity bean) have properties very similar to toxins in that they induce the production of antitoxins in the blood. The chemical character of the opsonins is not known, but no doubt will

be known eventually, and a long step in the progress of therapeutics will be made.

No one who does not follow closely the advances in chemistry can clearly comprehend the rapid strides the investigators are making in this direction. Occasionally an epoch-making discovery is made, often by accident. The discovery of radium is a case in point, and it will probably be a long time before its true uses and limitations are known. Another discovery, just announced, which bids fair to open the way for the artificial production of alkaloids and other active principles of plants, was made by accident during an analysis of turmeric to find just what constituted its coloring matter. No doubt you all remember the circumstances attending the accidental discovery of saccharin. The discovery of the laxative property of phenolphthalein (which promises to be extremely useful) was due to the cathartic action of wines in which it had been placed for the purpose of coloring them. It is said that Pasteur's discoveries in relation to ferments originated in his observation of the effect of bacterial action on racemic tartrate of ammonia.

It might be mentioned parenthetically that the chemist does not often attach his name permanently to his discovery after the manner of some of his medical brethren, as, for instance, Murphy's button, McBurney's point, Fowler's solution, antrum of Highmore, etc.

The research chemist needs but the slightest opening wherein he can insert his wedge in order to pry open the secrets of Nature. I sometimes fear that the average physician does not give due credit to the modest chemist whose unobtrusive work aids him so materially in his efforts to alleviate the sufferings of humanity, but gives the credit and the financial returns to the enterprising but not always scrupulous manufacturer who takes the result of these labors and exploits them with many flamboyant embellishments. I believe much of this is due to the lack of instruction in the underlying principles of chemical science in our medical colleges. Physicians are not, as a rule, familiar with the necessarily complicated nomenclature of modern organic chemistry, complicated because of the vast number of compounds that must be named, but which, when understood, convey definite information as to their structure. How many would clearly understand what I mean, for example, when I say that the toxicity of certain anilin derivatives varies with the position of the methyl group in the molecule, whether in the ortho, meta or para position and the modification and disappearance of the toxicity by the introduction of a haloid in the para position? Yet these are important if one is to clearly understand the therapeutic action of these agents. Proprietary manufacturers take advantage of this unfamiliarity to foist upon physicians articles which would not for a moment stand the scrutiny of the educated chemist.

In this connection I would like to refer to the U. S. P. and N. F. The U. S. P. is a book which was originally prepared by physicians and for physicians, but which has gradually drifted into the hands of the pharmacists, wholly, I think, through the neglect of the physicians. It was originally intended to be a concise description of those drugs which the experience of physicians had proved to be of real merit, excluding all

secret preparations and inert drugs; in short, to be a list of reliable drugs to which the physician might refer with confidence. I know of no book that would be more useful to the physician of to-day if it were continued according to the original conception. The trouble with most of our works on materia medica and therapeutics is that, like garden-seed catalogues, they speak of each article with equal enthusiasm, and the inexperienced physician is bewildered, while the man of experience knows that some of them are practically worthless, and the rest are of varying grades of usefulness, comparatively few bearing the stamp of thorough scientific investigation. Early in the history of the Pharmacopeia it became evident that the help of the chemist and pharmacist must be called in in order that the identity, purity and strength of the various drugs could be established. In the meantime many of our medical colleges were turning out doctors with a very inadequate knowledge of material medica and almost no knowledge of chemistry or pharmacy, so that the preparation and identification of drugs fell almost entirely into the hands of the pharmacist. The preparation of the Pharmacopeia has consequently been in their hands for several decades, although they have repeatedly urged the physicians to tell them what drugs they wanted so they could be included. Physicians were so indifferent to these requests that the only thing left for the pharmacist to do was to learn as best he could from his prescription files what drugs were used to the greatest extent and incorporate them in the Pharmacopeia, giving as far as possible tests for their identity and purity. The manufacturing firms were not idle and sent out their more or less plausible literature until many doctors got practically all their knowledge of materia medica and therapeutics from these advertisements and from detail men and have almost lost sight of the book which should be their authority, as it is prepared by men known for their scientific training and reliability and for the express purpose of insuring the physician that he will get exactly the drug that he prescribes and in its state of greatest purity and uniform strength.

The care and scientific accuracy used in the selection and preparation of drugs according to the rules laid down in the Pharmacopeia have led the government to establish it as the authority in that field.

It is now up to the physicians of the country to make known to the committee in charge of the revision just what changes they want made, what drugs they have found really useful that are not already included and what ones have been found useless that they may be dropped from the list. The convention meets in Washington, D. C., next May to formulate rules and appoint the committee which has charge of the revision. Having been a member of the American Pharmaceutical Association for more than ten years, I have had frequent occasion to meet the men who are active in preparing the book and *know* that they are earnest in their desire to serve the best interests of the physicians. The N. F. is a sort of supplement to the Pharmacopeia, giving directions for the identification and preparation of many drugs and compounds which are not used to the large and general extent required for introduction into the Pharmacopeia.

The newly developed ultra-microscopic method of observing the action of bacteria on the blood cells has done much to clear up the pathology of many diseases and has shown us where to apply our treatment and how to prevent them. The same method of observation has shown us that much that we have heretofore been accustomed to attribute to that unknown agency, vital force, may be accounted for by chemical action taking place within the cell, the so-called secondary respiration, for example. The minuteness of a blood cell might make it difficult for one to comprehend how much in the way of a chemical reaction could take place in it, but when we remember the *extreme* minuteness of the average molecule we have no difficulty in realizing that a blood cell might easily contain hundreds of millions of them undergoing all sorts of chemical changes. We know that oxidation and other metabolic changes continue within the cell long after ordinary respiration ceases, and so long as the blood brings the proper materials the changes go on indefinitely. When we learn to introduce the proper material into the cell to bring about the desired reaction, then will our therapeutics reach its goal. I believe that much of the future therapeutic progress will lie in the direction of the accurate knowledge and control of intercellular chemical reactions, for these lie near the origin of all life and energy.

We know that colloids which have not the power to pass through animal membranes, and, therefore, cannot pass through the cell wall, may become changed to crystalloids by combination with certain inorganic salts without necessarily changing the composition of the original colloid, and, on being freed from its inorganic compound, may become colloid again and thus be retained in the cell until needed for nutritive or other purpose. This may explain, partially at least, why the alkalinity of the blood is so necessary to health and even life. Enzymes which are colloid in their nature are thus inactive in the cell until the proper reagent comes along to free them.

That various cell structures have their individual affinities for certain drugs is well known, and advantage is taken of this fact in many ways. The assimilation of foods according to the affinities of the different cells has not been so well understood, and I believe that much progress is now due in the therapeutics of diet. The human machine will only work smoothly and perfectly when all its parts are not only properly adjusted, but when kept in the best condition. Nature's army of defense must be properly fed and taken care of. The food must be adjusted to the individual needs of the various parts of the machine. Many physicians still direct the diet of their patients as if the digestive system of every one was constructed on one invariable plan, and any defect or disarrangement was always in exactly the same spot. The chemistry of foods and the changes which they undergo in the process of cooking (which is only a variety of chemical reaction), it seems to me, are worthy of much study, and I am glad that many of our schools are taking up this subject. It is one in which the physician should be deeply interested, as the combination of the management of the diet *with* the administration of medicines often produces our best therapeutic results; in fact, it is often

necessary in order that our medicines shall have their desired effect at all.

Perhaps I need only mention the precipitation of alkaloids by alkaline stomach contents and their subsequent solution and absorption on the occurrence of acidity from any cause, thus producing unexpected or even cumulative effects. It may be recalled that the classic experiments of Beaumont on Alexis St. Martin, upon which most of our tables of relative digestibility of different foods are based, were made upon the stomach alone without considering that any digestion could take place in any other part of the primæ viæ.

Much stress has of late been placed on the necessity of thorough mastication. I notice that our honored chief chemist, Dr. Wiley, contends that this can be overdone, as rapid absorption is not always synonymous with healthy nutrition, on the supposition probably that the digestive organs must be given some normal exercise in order to remain healthy.

The therapeutics of posture has been emphasized by a recent writer, who maintains, with good reason, that the posture which entails the least strain on the various organs enables them to perform their functions and is, therefore, conducive to a longer and healthier life.

EYE SYMPTOMS IN DIABETES.*

H. Gradle, M.D.

It has been noted by all experienced clinicians that eye lesions occur frequently in diabetic patients, at least to the extent of 10 per cent., and in some statistical records, based on longer observations, even in more than 25 per cent. An analysis of case-records shows that the longer the disease has lasted the greater the probability of an eye complication, especially cataract. In private ophthalmic practice about 1 to 2 per cent. of patients have diabetes. It is not uncommon to have diabetes suspected for the first time on the basis of the eye symptoms.

There are some eight to ten different types of eye lesions observed in diabetes, occasionally in combination. I will pass them in review briefly with comments on their peculiarities.

Persistent and relapsing styes or even furuncles of the lids, while not common, are an occasional evidence of the lowered resisting power to pyogenic infection in diabetes.

Iritis, also an infrequent complication, may present characteristic peculiarities of diabetes. Generally one-sided, it is sometimes rather slow to disappear. Occasionally it leads to fibrinous or even a purulent exudate in the anterior chamber, which latter is otherwise rarely seen in non-traumatic iritis. It ends in recovery probably in all cases.

Weakening and at times even paralysis of the power of the accommodation is not rare in diabetes. A failure of accommodation not accounted for by the age, especially if of rapid development, ought to

* Read at the meeting of the Chicago Medical Society, Jan. 19, 1910.

suggest a urinalysis. This condition may improve, if the diabetic process can be controlled by diet.

There are on record a small number of striking observations in which the refraction of the eye changed from one to three diopters within a very short time in diabetic patients. In most of the instances reported it was an abrupt development of hyperopia, but in some cases, too, it was, on the contrary, a sudden occurrence of myopia or increase of pre-existing myopia. The only plausible explanation of these rare occurrences is a change in the refractive index of the lens.

The most common eye complication of diabetes is cataract. Diabetes should always be thought of when opacity of the lens develops in both eyes in middle life, progresses steadily and sometimes rapidly, and is not accounted for by pre-existing disease of the eye or trauma. In most instances the opacity is the same as in senile cataract, but in a small minority it appears characteristic of diabetes in the form of diffuse bluish haze of the anterior layer of the lens with well-defined radiating lines indicative of the segmental arrangement of the lens fibers. The progress of cataract can be checked if the disease is controllable by diet. When this is not the case the opacity continues to increase steadily, though not always at a uniform rate.

While diabetic cataracts have been removed satisfactorily by all ophthalmic surgeons, some have been impressed by the greater danger of the operation in diabetics. A large statistic record last year by Uhthoff has not borne out this impression. His results were not inferior to the average obtained in non-diabetic subjects, but he admits the greater probability of delayed healing caused by transient iritis. In the discussion at the Heidelberg Ophthalmic Society following Uhthoff's paper, most operators agreed with the good prognosis of the operation, even when sugar is present and no dietary restriction has been adopted. It is, however, common surgical experience that diabetic patients are always endangered by general narcosis, particularly from chloroform.

The most characteristic of diabetic eye lesions is retinitis. There is one type especially which permits the recognition of diabetes by means of the ophthalmoscope, viz., the occurrence of white spots varying from large roundish dots to small irregular figures scattered diffusely over the retina but not extending to the periphery, and usually intermingled with minute hemorrhages. In other cases the hemorrhages predominate and attain larger proportions. The disease is said to be always bilateral, but I have personally seen it one-sided in one instance. It is slowly progressive unless the sugar can be entirely abolished. In one undoubted instance of this kind I have seen complete recovery. But even when not arrested it does not destroy sight entirely. The greatest danger in the more pronouncedly hemorrhagic form is the sudden complication by acute glaucoma, usually of a malignant character. Unlike albuminuric retinitis the involvement of the retina in diabetes does not signify a bad prognosis for life.

The life of the diabetic is seriously threatened, however, when his sight is impaired by retrobulbar neuritis. This singular affection is prac-

tically identical with the disease brought on in non-diabetics by chronic alcohol and tobacco poisoning. In both events it is a disease of those fibers of the optic nerve which supply the central area of the retina, and in both cases it leads to partial atrophy of that nerve tract, if not checked in time. Before actual atrophy has occurred, it cannot be recognized with the ophthalmoscope. It dims central sight only, gradually increasing until reading becomes entirely impossible. The diagnosis can easily be made by testing for a central scotoma, especially with colors. It seems to occur only in patients whose disease cannot be controlled by diet, and hence its damages can usually not be undone, though perhaps its progress may be somewhat retarded by proper control.

Other affections of the optic nerve—neuritis and atrophy—have also been observed occasionally in diabetic patients, but not in any frequency or any other manner characteristic of diabetes. A not uncommon complication met with are palsies of one or the other external eye muscles, usually ending in recovery. It may also be stated that hemorrhages, while not particularly frequent in any one locality except the retina, occur besides in the conjunctiva, in the anterior chamber after cataract operation and in the vitreous to a sufficient extent to suggest that diabetes favors the rupture of ocular blood-vessels.

THE DIAGNOSIS AND TREATMENT OF PLUMBISM.*

BERNARD FANTUS, M.D.
CHICAGO, ILL.

Plumbism is, next to alcoholism, the most common form of chronic poisoning. Inasmuch as errors in the diagnosis of plumbism are frequent and the treatment, once the diagnosis is made, is generally very efficient, it seems that this condition may still merit a share of your attention.

In the diagnosis, the history of exposure to lead is, of course, of importance, the following trades being most likely to produce plumbism: lead mining and smelting, the manufacture of white lead and lead colors, of lead pipes and other lead objects, of pottery and earthenware, of electric storage batteries; also painting, plumbing and printing. Nevertheless it must be remembered that lead poisoning may occur in people in whom exposure to lead may not even be suspected, as in a seamstress who developed plumbism from biting off the ends of black thread that was found to contain lead, or in a teamster who ingested the lead by habitually drinking the first glass of beer drawn from lead pipes in which it had been standing over night; furthermore, it must be remembered that lead workers may suffer from other diseases besides those due to lead. A brother of mine, a printer by occupation, was supposed to suffer from lead colic, when the condition was one of intestinal intussusception, from which he finally died. Hence the diagnosis of plumbism must be based upon other facts than mere exposure, and such are found in the characteristic signs and symptoms of plumbism.

* Read before the Chicago Medical Society, Jan. 26, 1909.

I would first like to call your attention to the fact that plumbism is a general, not a local disease; that one portion of the body is never exclusively affected, and that, while the manifestation of the disturbances of any one organ may predominate, careful search will nearly always show involvement of other organs. It is also important to recognize the fact that the disease shows a tendency to evolve itself in a certain order; that, for instance, affection of the nervous system is hardly ever first to appear, that it is usually preceded by colics, and that these are practically always preceded by certain gastro-intestinal and general manifestations.

The earliest symptoms of plumbism are usually vague digestive disturbances, such as loss of appetite, eructations and feeling of pressure after eating, coated tongue, offensive breath, and a peculiar taste sensation that is often described as sweetish or metallic. Experienced patients can often tell the reappearance of their trouble by the occurrence of this taste sensation. Absence of hydrochloric acid has, within recent years, been discovered in quite a proportion of chronic cases. How early it appears and to what extent it is responsible for the indigestion of plumbism still remain to be determined. The bowels are practically always constipated, the constipation being of the spastic variety, and quite resistant to cathartics.

Another early symptom of plumbism is pallor, sometimes in excess of the anemia, evidently in part due to vascular spasm. There is a reduction in both the number of red blood corpuscles and in the hemoglobin. The stained blood film frequently shows a few nucleated red cells, and, what has of late created special interest, basophilic granules in many of the erythrocytes. It is stated that pernicious anemia is the only other disease in which basophilic degeneration of the red blood cells is as marked, which in this disease is accompanied, however, by various other evidences of hemic degeneration that are absent in plumbism. It seems that the ordinary polychrome methylene blue stains are unsatisfactory for the purpose of bringing out this basic granulation of the erythrocytes, and that prolonged staining with hematoxylin and eosin is required.

The blue line in the margin of the gums, when present, is of great value in the diagnosis of plumbism; its absence does not exclude lead poisoning, for in the formation of this line two factors are necessary, namely, lead in the blood circulating through the gums and hydrogen sulphid produced by putrefaction in the crevices between teeth and gums. The line is, therefore, frequently not found in mouths that have been kept scrupulously clean, while its absence in an ill-kept mouth is of considerable weight against the probability of plumbism. The line is sometimes so faint that a hand lens may be needed to discover it; it is often best marked about the incisors and canines of the lower jaw, most especially in the portion of the gums between the teeth. To distinguish it from black deposit on the teeth, a small slip of white paper may be pushed between the edge of the gum and the teeth.

The colic, which occurs after these premonitory symptoms have existed for some time, is merely an acute exacerbation of the spastic condition of the bowels. This spasm is most probably due to paralysis of the

splanchnic nerves, which are the inhibitory nerves of the automatic ganglia of the intestinal wall. Having passed dry hard stools of very small caliber for some time, the patient finally becomes completely constipated, and often quite suddenly at night most violent attacks of abdominal pain set in, which are aggravated by the cathartics that the patient usually takes in the vain hope of relieving himself. The physician often finds the patient pacing the floor or sitting bent over with his fists pressed into the abdomen. Each paroxysm of pain usually lasts less than a quarter of an hour, is followed by an interval of partial relief, but is succeeded by recurrences of the violent pain, which may be accompanied by nausea and vomiting. While the pain may be located anywhere in the abdomen, it most commonly centers about the umbilicus. The abdomen is usually retracted and not very sensitive. It is frequently claimed that tenderness does not exist; indeed, that pressure relieves the pain. This, however, is not always the case and we occasionally find patients with general or localized hyperesthesia of the abdomen. Nevertheless comparative indifference of the patient to mechanic disturbances is one of the characteristic features of this condition. Thus changes in position do not influence the pain as they do in inflammatory or ulcerative conditions, in which the patient will lie still, in marked contrast to the restlessness of the patient suffering from lead colic. While flexion of the thighs upon the abdomen gives relief, the patient will flex both thighs, not the right thigh only, as he would in appendicitis. The most important distinguishing feature, however, is the absence of marked general disturbances. The pulse is usually slow, of rather high tension. There is no fever; the temperature is more likely to be subnormal. There is no sweating, even with the most violent paroxysm. Indeed, comparative indifference to mechanic disturbances, afebrile course and absence of leucocytosis are our chief aids in distinguishing this condition from appendicitis and peritonitis. I know of a number of cases in which patients suffering from this condition have sacrificed their appendix to diagnostic error.

In the intestinal crises of locomotor ataxia, pains identical with those of lead colic may occur; they are, however, accompanied by diarrhea, which is very rare in plumbism. Testing of the patellar and of the pupillary reflexes ought to prevent error. It must always be borne in mind that plumbism may be complicated by appendicitis, gastric ulcer, nephrolithiasis, or other painful abdominal condition.

A patient who has once had lead colic should give up his lead work; otherwise the colic is almost sure to return; and, what is worse, more serious manifestations will certainly make their appearance.

Closely allied to lead colic and often appearing at about the same time are vague neuralgic pains, which occur in paroxysms and may appear in almost any part of the body. Paresthesia and anesthesia also occur. Tremor, which may resemble the tremor of paralysis agitans, is quite frequent. The most important and most characteristic of all the nervous symptoms of plumbism, however, is paralysis of the extensor muscles of both hands, producing, when fully developed, the bilateral "wrist drop." While as a rule, one hand is affected several days before the other, and the paralysis in one hand is often more marked than in

the other, the affection is practically always bilateral. This and the fact that the paralysis is purely extensor, the flexor muscles not being impaired, that it nearly always spares the supinator longus, and usually the long abductor of the thumb, that there is no disturbance of sensation as a rule, and that rapid atrophy and reaction of degeneration make their appearance, are almost distinctive of plumbism. However, unless the paralysis has been preceded by colic, the diagnosis of plumbism should be made with caution, as colic precedes the paralysis in over 93 per cent. of cases. While the musculo-spiral nerve is the one most commonly affected, sometimes involvement of other nerve territories occurs, so that in any neuritis plumbism must be thought of.

As paralysis usually incapacitates the worker from pursuing his occupation, it carries with it the prime necessity for cure by removing the patient from further exposure to the poison. One would think that people who have passed through such suffering and disability would give up an occupation that produced it. Still, so great is our tendency toward the direction of least resistance that many of these workers return to their occupation as soon as they are able. It is in such cases most especially that we see the graver forms of plumbism with degeneration of brain, kidney, or both. It is especially in combined alcoholism and plumbism that cerebral and renal lesions are most prone to develop.

Plumbic encephalopathy may appear in acute as well as in chronic form. Epileptiform convulsions, delirium that sometimes resembles delirium tremens, and coma are the most common and striking manifestations of the acute form which is very dangerous, being fatal in perhaps one-fourth of all cases. The chronic form resembles general paresis, is, however, usually atypical and often ends in recovery. The following nervous disturbances should suggest search for chronic poisoning, especially alcoholism and plumbism: 1. Epilepsy occurring for the first time in later life. 2. Affections of the nervous system that cannot well be classified among any of the typical nervous diseases.

There can be no doubt that lead is capable of producing genuine chronic interstitial nephritis, which may develop stealthily in the course of years, giving us no warning until the degeneration is far advanced. Arteriosclerosis, cardiac hypertrophy, uremia, apoplexy, may all occur in connection with it. Plumbism also seems to produce a predisposition to gout.

The finding of lead in the urine is positive evidence of lead poisoning. A negative result, however, means nothing, as lead is practically never found in the later stages of plumbism, though it is usually present in the earlier stages. The search for it should be undertaken after giving potassium iodid for a few days. In testing for lead in the urine, the organic matter must be oxidized by heating about 500 c.c. of urine with 50 c.c. of hydrochloric acid and 2 or 3 gm. of potassium chlorate, then driving off the chlorin and concentrating by evaporation. If now a stream of hydrogen sulphid is passed through the filtrate, and it produces a black precipitate, plumbism is rendered highly probable; and made certain, if, after having caught the precipitate on a filter, washing it and then dissolving it in nitric acid, the resulting solution produces a white

precipitate with sulphuric acid and a yellow precipitate with chromic acid. When urine is sent to a laboratory to be examined for lead the physician should send at least a quart, see to it that it is slightly acidulated and that it be put in flint glass bottles immediately on passing.

THE TREATMENT OF PLUMBISM.

In the prophylaxis of plumbism cleanliness is the master word. As this requires the observance of a great many details, and as these details are usually not observed unless they are enforced by law, I will leave this portion of the subject with the plea that our country may follow the example of the European countries, most especially of Germany, in regulating these dangerous industries. It may be advantageous to point out, however, that ingestion of lead is by far the most important method by which lead is introduced into the system, and that it is the dirty, lead-reeking hand of the workman that contaminates his daily food. Careful scrubbing of the hands before eating, or still better, the wearing of rubber gloves, would do a great deal to lessen plumbism. To lessen the absorption of the ingested lead, sulphuric acid lemonade, the free use of milk, and of fats have each perhaps some little value, but not enough to be depended upon.

The three indications in the curative treatment of plumbism are: 1, To stop the introduction of the poison into the system; 2, to favor its elimination; and 3, to antagonize the disturbances produced by it.

1. To stop the introduction of the poison, usually means prompt change of work, not only temporarily, but permanently. An individual who has once suffered from lead poisoning is extremely susceptible to its recurrence, and recurrence in an aggravated form.

2. In favoring the elimination of lead, our first care should be to obtain free evacuations of the bowels, two or three a day, which are sometimes difficult to obtain owing to the obstinate constipation present. It is a mistake to use in this condition purgatives that act largely upon peristalsis. The salines, and among them most especially magnesium sulphate, should be used in large and frequent doses. The action of the purgative can best be reinforced by the administration of atropin which antagonizes the intestinal spasm, and the use of large oil enemas which are as useful here as they are in other forms of spastic constipation. After the bowels have been freely opened, and not until then, potassium iodid should be given in doses of 5 grains (0.3 gm.) three times daily. Its exhibition should be accompanied by the free use of water. How it acts is a matter of speculation, but that it acts is certain. Anything that increases metabolic activity favors the elimination of the deposited lead. Sweat baths with or without the use of sulphids are useful. A sulphur bath may be obtained by dissolving six ounces of potassium sulphuret in half a tubful of water. But, above all, does daily work in the sweat of the brow, preferably out of doors, answer the indication; and this is the kind of work we should advise our patients to take up, at least for a while.

3. As to the symptomatic treatment, little needs to be said. In the control of lead colic, the essential thing is to obtain evacuation of the bowels, which is best accomplished as already indicated. The use of hot

applications to the abdomen and the hypodermic administration of morphin cannot, however, be dispensed with. While the administration of iodid should not be commenced early in a patient who is just recovering from a severe colic, as it may precipitate its recurrence, I have found that its use in lesser pains of plumbism is almost specific in relieving them. In the anemia of plumbism, arsenic and iron must be used very sparingly, as either may aggravate some of the ill effects of the lead; the arsenic, the tendency to nerve degeneration, and the iron the digestive disturbances and the constipation. Another agent that reinforces the deleterious action of lead is alcohol, which, therefore, must be absolutely forbidden. As the symptomatic treatment of the paralysis of the cerebral and the renal conditions of plumbism does not differ from that of the same condition due to other causes, I will not discuss them here.

NEGLECTED SOURCES OF INFECTION.

JAMES CASEY, M.D.
CHICAGO.

Incessant care and watchfulness are essential to the preservation of health from the cradle to the grave. These facts have been frequently made manifest to the writer, who for many years has been a close observer of the various manners in which infection and disease may be communicated to human beings through the careless and flagrant manner in which articles of food are exposed and handled from the time they leave the producer until they are placed on the table for consumption.

The more this matter has been investigated the more apparent becomes the fact that it is a subject germane to prophylactic medicine, and any work tending to throw light on it will doubtless assist ultimately to a better understanding of the important rôle that these sources play in the transmission of micro-organisms of disease. The laws and ordinances that obtain at the present time are inadequate. In cities a practical demonstration may be seen any day by walking along the street or in visiting the shops. To see unwrapped bread tossed into dirty wagons or baskets like stove wood, handled with gloves that also serve as handkerchiefs or carried in the arms, rubbing against soiled clothing and sprayed with the secretions of mouth and nose, or stacked upon counters like bricks to be patted, thumbed or punched by the dirty hands of all comers, is not an uncommon sight.

The soiling of this class of food that on account of its nature cannot be washed or cleaned is doubly pernicious and should be rigidly guarded against by proper wrappings from the time of production until delivered to the consumer. In regard to our milk supply it is surprising, in view of the fact that many efficient laws have been passed and enforced bearing on hygiene and sanitary science, and the vast amount of good and effective work that has been done by individuals, societies and municipal bodies to raise the standard of purity and quality of the milk supply, how little attention is given to protect the container from contamination, or, what

is more vital and practical still, to warn the consumers against the danger from the container that still exists, although the contents of bottle or can at time of filling might have been of the highest standard of quality and purity, unless the container is thoroughly scrubbed and cleaned before opening. It is more essential now than ever before that this matter should be brought at once to the attention of consumers, on account of the sense of security into which they have been lulled by the successful and energetic work that is being done to furnish a pure and wholesome milk supply, viewing with entire confidence the innocent-looking milk container that may be loaded on its external surface with millions of death-dealing germs of disease that subsist on the tissues of man. Inquiry has determined that in many instances, in fact usually, milk containers are not cleaned before being opened. In one instance the party interrogated in regard to this matter presented a picture of mild astonishment and said, "Why, no; I thought the health department attended to that." The most economical and practical way to bring this important hygienic matter to the attention of consumers is to oblige producers or dealers to have a suitable notice printed on the bottle cap and the can properly tagged, warning consumers against this danger. The additional expense, on account of this requirement, would be so slight as to be scarcely worthy of consideration.

In climates where the temperature is below the freezing point the contents of milk bottles should not be allowed to freeze, for by so doing the caps are forced up on a cone of milk and cream, rendering its contamination doubly sure, not alone from the containers, but also from other sources, such as air and dust, also dogs and cats, that are frequently the carriers of dangerous diseases. When the cone of milk melts down it bathes the caps and lips of the bottles, washing the impurities into the contents.

In order to determine the correctness of my conclusions and bring to the attention of all what the writer believes to be a prolific source of disease and attract others, who have more time for laboratory work, to this field, a number of examinations were made, both macroscopically and bacteriologically. Inspection showed that in many instances both cans and bottles were very dirty. The close examination of the crease, running up to the bottle lip and under the lip, was frequently filled with a very hard substance, suggesting that it had survived at least one washing. In one instance a direct smear, made from a characteristic coating on cap and lip of bottle, showed microscopically micrococci catarrhalis, staphylococci and pneumococci. Numerous cultures made from caps and lips showed the same organisms, but not always together, excepting in one instance. In this instance the picture presented was the same as that derived from a throat culture from a patient complaining of soreness in the postnasal space, namely, micrococci catarrhalis, staphylococci and pneumococci. Cultures made from neck and body showed the same organisms, but less frequent, and a great abundance of hay bacilli, the latter bacilli being frequently present in all the cultures both top and body. The colon bacillus was found in one culture made from the body. No cultures were

made from cans. The source of many of these micro-organisms is undoubtedly due to hand and glove contact and the "spraying process."

Now the question arises, if easily demonstrable micro-organisms are present, may not also some of the more difficultly demonstrable micro-organisms also be present, and may not this be a prolific source of entrance to homes of whooping cough, measles and the much-to-be-dreaded scarlet fever? If the *Micrococcus catarrhalis* that thrives in the nasal and throat secretions of human beings is present, why may not some of the other micro-organisms that are frequently found there also be present, such as influenza, diphtheria and the tubercle bacillus? If the *Bacillus coli* is present may not also the *Bacillus typhosus* be present, and if these micro-organisms are present on milk bottles there is ground for a reasonable presumption that they are also present on the bread that we eat.

5326 Lexington Avenue.

MEDICAL SOCIETY NOTES.

The regular meeting of the McLean County Medical Society was held March 3. The following paper was read: "The Relation of the Medical Profession to the Non-Medical Practitioner," Dr. A. L. Fox; discussion, Drs. F. C. McCormick, H. W. Elder and T. D. Cantrell.

Tazewell County Medical Association met in Pekin, April 12, and elected the following officers: President, Dr. Harry V. Bailey, Pekin; vice-president, Dr. Harley A. Zinzer, Washington; secretary, Dr. Fernando C. Gale, Pekin; delegate to the state society, Dr. Henry L. Yoder, Morton, and alternate, Dr. Eugene F. Kelchner, Delavan.

At the regular meeting of the Rock Island County Medical Society, held in New Harper, April 12, the following officers were elected: President, Dr. Henry S. Bennett, Moline; vice-presidents, Drs. Warner L. Eddy, Milan, and Joseph E. Asay, Rock Island; secretary, Dr. Albert N. Mueller, Rock Island; treasurer, Dr. Arthur T. Leipold, Moline.

The Logan County Medical Society held its annual session and elected officers March 31. The officers for the year are: President, D. M. Perry, Broadwell; first vice-president, Dr. C. C. Montgomery, Lincoln; second vice-president, Dr. C. C. Reed, Lincoln; secretary, Dr. H. C. Oyler; treasurer, Dr. A. M. Sargent. One new member was received, Dr. C. B. Caldwell, assistant superintendent of the Lincoln state school and colony. Dr. C. Rembe was appointed delegate to the meeting of the state medical society.

OFFICIAL PROGRAM

OF THE SIXTIETH ANNUAL SESSION OF THE ILLINOIS STATE MEDICAL SOCIETY, TO BE HELD AT DANVILLE, MAY 17, 18, 19, 1910.

ORDER OF PROCEEDINGS.

Registration office on the stage of the Armory, Walnut Street, between North and Harrison, one-half block from the Convention Hall.

TUESDAY—FIRST DAY—AFTERNOON

3:00. Call to order of Secretary's Conference (Ferra Hall), by C. H. Lovewell, Chicago.

EVENING.

8:00. Call to order of the House of Delegates by the President, J. L. Wiggins, in Ferra Hall, North Street, between Walnut and Vermilion.

WEDNESDAY—SECOND DAY—MORNING.

9:00. Call to order in general session by the President in the Woman's Club Rooms, North Street, between Walnut and Vermilion, J. L. Wiggins, East St. Louis.

Invocation, Rev. Walter Aitken, pastor First M. E. Church.

Address of welcome, Louis Platt, Mayor.

Address of welcome, Benjamin Gleeson, President Vermilion County Medical Society.

Response on behalf of the Society by the President.

Report of the Committee of Arrangements by the chairman, Stephen C. Glidden.

Announcements by the President.

9:30. Call to order of the sections for the reading and discussion of the papers of the program, in the Woman's Club Rooms.

1:00 p. m. Adjournment for luncheon.

AFTERNOON.

2:00 p. m. Call to order. Continuation of Scientific Program.

6:00 p. m. Adjournment.

EVENING.

8:00. Music, to be followed by calling to order by First Vice-President, C. U. Collins, Peoria, First M. E. Church, corner Vermilion and Williams Streets.

President's Annual Address, J. L. Wiggins, East St. Louis.

Oration in Surgery: "Surgical Aspect of Cancer, with a Further Report on the Hemolytic Test," George W. Crile, Cleveland, Ohio.

Oration in Medicine: "The Future in Medicine," Charles G. Stockton, Buffalo, N. Y.

Public Reception is to follow above addresses to be held in the church and followed by light luncheon in the church supper room.

THIRD DAY—THURSDAY—MORNING.

8:30. Call to order. Continuation of sectional work.

12:00. Noon. Call to order of Medicolegal Committee (Ferra Hall), by Harold N. Moyer, Chicago.

1:00. Adjournment for luncheon.

AFTERNOON.

2:00. Continuation of sectional work.

4:00. Call to order in General Session by the President to receive report of House of Delegates.

Induction of President-elect.

Final adjournment.

NOTE.—The chairman of the Committee on Entertainment of the Ladies has made preparations for a luncheon on Wednesday at the Golf Club Grounds. Automobile ride on Thursday and a reception at the residence of Mrs. Stephen C. Glidden. A luncheon for medical women will be given by Mrs. Stephen C. Glidden, Thursday, at 1 p. m., at 422 North Vermilion Street.

SECTION ONE.

Chairman.....W. H. Gilmore, Mt. Vernon
Secretary.....Frederick Tice, Chicago

SECTION TWO.

Chairman.....S. C. Strummel, Macomb
Secretary.....Dean D. Lewis, Chicago

Oration in Surgery: "Surgical Aspects of Cancer, with a Further Report on the Hemolytic Test," George W. Crile, Cleveland, Ohio.

Oration in Medicine: "The Future in Medicine," Charles G. Stockton, Buffalo, N. Y.

1. The Medical Treatment of the Pelvic Diseases of Women, from the Standpoint of the Surgeon, J. F. Percy, Galesburg.

Discussion opened by Clifford U. Collins, Peoria.

2. Observations in Two Thousand Blood Examinations for Hemameba Malariæ, T. M. Aderhold, Zeigler, Ill.

Discussion opened by A. R. Edwards, Chicago.

3. Some Diabetic Obiter Dicta, S. T. Robinson, Edwardsville, Ill.

Discussion opened by R. T. Woodyatt, Chicago.

4. Unusual Case of Appendicitis, George N. Kreider, Springfield.

Discussion opened by A. D. Bevan, Chicago.

5. The Leucocyte in the Diagnosis, Classification and Prognosis of Pulmonary Tuberculosis, J. F. Hultgen, Chicago.

Discussion opened by E. H. Butterfield, Ottawa.

6. Fat Embolism, with Report of a Fatal Case, E. A. Graham, Chicago.

Discussion opened by Allen B. Kanavel, Chicago.

7. The Technic and Value of the Wassermann Test in the Diagnosis and Treatment of Syphilis, W. T. Mefford, Chicago.
Discussion opened by F. G. Harris, Chicago.

8. Blastomycosis (Illustrated), A. M. Stober, Chicago.
Discussion opened by Oliver Ormsby, Chicago.

SYMPOSIUM ON DISEASES OF THE JOINTS.

9. The Bacteriology and Pathology of Joint Infections, E. E. Irons, Chicago.

10. Acute Infections of Joints and Their Mechanical and Surgical Treatment, J. B. Murphy, Chicago.

11. Neurological Considerations of Joint Diseases, Archibald Church, Chicago.

12. Joint Diseases, from the Orthopedic Standpoint, John Ridlon, Chicago.

13. Bile-Tract Infection, J. E. Coleman, Canton.
Discussion opened by R. H. Babcock and D. N. Eisendrath.

14. Pellagra, George W. Webster, Chicago.
Discussion opened by L. G. Pollock, Dunning.

15. Persistent Infections in Specific Urethritis in Relation to the Penile Urethra, B. C. Corbus, Chicago.
Discussion opened by Louis Schmidt, Chicago.

16. Ectopic Pregnancy, with Report of Fourteen Cases, E. C. Franing, Galesburg.
Discussion opened by J. Clarence Webster, Chicago.

17. Recent Contributions to Our Knowledge Concerning Sympathetic Ophthalmia, E. V. L. Brown, Chicago.
Discussion opened by Dr. R. C. Matheny, Galesburg.

18. Fracture-Dislocation of the Atlas and Axis, Carl E. Black, Jacksonville.
Discussion opened by J. B. Murphy, Chicago.

19. The Rationale of Infections of the Nasal Accessory Sinuses, William L. Ballenger, Chicago.
Discussion opened by M. S. Marcy, Peoria.

20. A Practical Measure in the Prophylaxis of Postoperative Cystitis, E. C. Dudley, Chicago.
Discussion opened by Emil Ries, Chicago.

21. Bacteriemia, with Special Reference to Endocarditis, Edward C. Rosenow, Chicago.
Discussion opened by B. W. Sippy, Chicago.

22. Endocarditis, R. B. Preble, Chicago.
Discussion opened by J. B. Herrick, Chicago.

23. Early Efficient Surgical Treatment of Skull Fracture, F. E. Schurmeier, Elgin.

Discussion opened by C. D. Center, Quincy, and F. A. Besly, Chicago.

24. Gastro-Intestinal Infections, J. W. Van Derslice, Chicago.

Discussion opened by John Q. Roane, Carlyle.

25. Symptoms and Treatment of Exophthalmic Goiter, Cassius C. Rogers, Chicago.

Discussion opened by J. W. Hamilton, Mt. Vernon, Carl B. Davis, Chicago. W. E. Walsh, Morris, will show during the discussion a Cretin Presenting Symptoms of Hyperthyroidism.

PSYCHOPATHIC SYMPOSIUM.

26. The Study of Mental Disorders, H. Douglas Singer, Hospital.

27. The Borderline Psychoneuroses, E. L. Crouch, Jacksonville.

28. The Prevention and Treatment of Insanity, Eugen Kohn, Anna.

Discussion opened by Frank P. Norbury, Kankakee.

29. Tuberculosis of the Ear, Throat and Nose, Arthur E. Prince and W. G. Bain, Springfield.

Discussion opened by C. W. Lillie, East St. Louis.

30. The Relations and Clinical Significance of the Urinary Acidity, Henry R. Harrower, Chicago.

Discussion opened by Frank Billings, Chicago.

31. A Dressing for Colle's Fracture, R. J. Christie, Quincy.

Discussion opened by Carl E. Black, Jacksonville.

32. Report of Two Cases of Acute Perforating Gastric Ulcer Requiring Gastrojejunostomy as a Secondary Operation, J. E. Allaben, Rockford.

Discussion opened by M. L. Harris, Chicago.

FOURTH ANNUAL SECRETARIES' CONFERENCE.

C. Hubart Lovewell, President.....Chicago.
Marion K. Bowles, Vice-President.....Joliet
D. G. Smith, Secretary.....Elizabeth

Current Medical Literature and How to Use It, Carl E. Black, Jacksonville.

The Secretary, E. W. Feigenbaum, Edwardsville.

What the President Can Do to Make the County Society a Success, A. E. Bulson, Jr., Editor of THE JOURNAL of the Indiana State Medical Society.

The Secretary's Part in the Organization of the Medical Profession; Is It Worth While? J. F. Percy, Galesburg.

The presidents of county and district societies and the members of the Judicial Council are cordially invited to be present and take part in the discussion.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

GENERAL OFFICERS 1909-10

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W. K. NEWCOMB, Champaign.

MAY, 1910.

THE STATE BOARD OF HEALTH AND CRIMINAL ADVERTISEMENTS IN THE CHICAGO DAILY PRESS.

At the annual meeting of the Chicago Medical Society held June 19, 1907, Dr. G. W. Webster, President, in the chair, the committee on criminal abortion, composed of Drs. Holmes, Bacon and Nagle, reported that the committee had been successful in suppressing all objectionable advertisements in the daily press of Chicago. This had been accomplished by harmonious cooperation between the committee, the Coroner and States Attorney. After giving an interesting account of the work of the committee, the report concludes with the statement that a "stop order" had been issued by the Postmaster General against a certain number of individuals and institutions, who were declared professional abortionists or fictitious firms.

In the September, 1907 issue, page 399, of the Monthly Bulletin of the Illinois State Board of Health, appears a statement evidently written by Secretary Egan, in which all the credit for the action of the Post Office Department, in these cases, is taken by the State Board of Health. The list printed in the State board publication corresponds almost ex-

actly with that of the committee. Absolutely no mention is made of the work of the committee of the Chicago Medical Society, but on the contrary, the secretary makes the following misleading statement in one paragraph:

"It is probable that the name of 'Dr.' Gordon Francis, alias 'Dr. D. Dunn,' of the 'Dr. Dunn Medical Institute,' of the *Inter-Ocean* building, who was prosecuted recently by the State Board of Health, and fined one hundred dollars ($100) and costs, will be added to this list. Full particulars concerning this man's methods of practice have been furnished to the postal authorities, who have given assurances to the State Board of Health that if it can be proven that fraud has been practiced in any of the so-called 'medical institutes' the mail of the offender will be stopped at once, and publications containing advertisements of the person or institutes will be barred from the mails.

"While it is not within the power of the State Board of Health to prevent the operation of medical institutes conducted by licensed physicians, the board can successfully prosecute any unlicensed practitioner who is shown to violate the law, and the board can, likewise, summarily end the practice of any physician, who is known to practice under the name of another physician."

The last sentence of Secretary Egan's statement is of special interest because one of the advertisers barred from the mails by the Post Office Department at the time was one E. J. Dennis, 163 State Street, Chicago. Dr. Dennis was licensed by the Illinois State Board of Health in 1900. If Dr. Dennis was guilty of the charges made by the Chicago Medical Society and the United States Post Office Department, there would seem to be no reason why his license should not long since have been revoked by the Illinois State Board of Health, under the law of 1899.

It appears that the secretary of the State Board of Health, in a manner characteristic of him in this, as in many other instances, took unto himself credit which was altogether due other persons. We recently communicated with Dr. Holmes, and received from him a communication which appears below and which shows conclusively the methods of Secretary Egan:

DR. HOLMES' LETTER.

CHICAGO, April 22, 1910.

My Dear Dr. Kreider:—By some mischance your letter was mislaid, and just now discovered. The State Board of Health took no position in the investigation of the abortionists. The board was not asked to lend us aid, neither did it initiate any action so far as I know, towards the suppression of the abortion evil. The results accomplished were due absolutely to the unaided efforts of the committee on criminal abortion of the Chicago Medical Society. After the evidence was produced the post office department took action.

When an allied committee investigated midwives I visited the president of the board, Dr. G. W. Webster, asking that our investigator be

appointed by, or empowered to represent, the board. The matter was put up to Dr. Egan, and the then attorney of the board—promises were made, but finally we concluded as the appointment was deferred and deferred we should proceed independently. In the investigation of the midwives the board did not offer or aid us in any manner.

(Signed) Yours truly, R. W. HOLMES, M.D.

SECRETARIES' CONFERENCE.

FOURTH ANNUAL CONFERENCE OF THE SECRETARIES OF THE COMPONENT COUNTY SOCIETIES OF THE ILLINOIS STATE MEDICAL SOCIETY, DANVILLE, ILLINOIS, TUESDAY, MAY 17, 1910, AT 5 P. M.

The following program will be presented to a joint conference of the Secretaries and Presidents of County and District Societies and the members of the Judicial Council:

Current Medical Literature and How to Use It.
By DR. CARL E. BLACK, Jacksonville.

The Secretary. By E. W. FEIGENBAUM, Edwardsville.

What the President Can Do to Make the County Society a Success. By A. E. BULSON, JR.
Editor of THE JOURNAL of the Indiana State Med. Soc.

The Secretary's Part in the Organization of the Medical Profession; Is It Worth While?
By J. F. PERCY, Galesburg.

Special thought has been put on arranging this program with the idea of furnishing to every member timely, vital and propelling ideas in regard to society organization and direction.

Every secretary has problems to meet peculiar to his own district, but a general idea and plan of society work furnishes a large field for thought and discussion.

As every secretary knows, a large part of the active work of any medical society gravitates to his shoulders, and it is with the purpose of comparing the methods used in different counties, districts and states that these conferences are held. In accordance with a generally accepted feeling that the presidents of county societies would also enjoy attending this conference, it has been thought advisable to include all these as well as the members of the Judicial Council.

The time has been so arranged as not to conflict with any of the scientific program, and it is hoped that every secretary will make a strenuous effort to be present.

The time is ripe, and we hope not far distant, when every county society will send its secretary to the State Meeting and pay his expenses. He should be the logical delegate in every instance. If he is willing to give the time and energy and brain necessary to make his county society a success, he should have his reward. Strange, if he is so all-important and

necessary at home that he is scarcely seen or heard from at the average State Meeting. So we ask, "Ought he not wear a delegate's badge?"

So, Brother Secretaries, if you love your work and are anxious, arrange your work so you can leave, get your think factory agoing and come to the meeting ready to tell us of your success, and if you have had failures (and who has not?) let us reason together as to WHY.

Let us have for our motto:

"HIGHEST SCIENTIFIC IDEALS, HARMONY, AND EVERY MAN A BOOSTER."

BUREAU OF THE MEDICAL SOCIETY OF CHICAGO.

Mr. John W. McMahon, manager of the bureau, submits the following statement of the history of the bureau, what it has accomplished and what it expects to do in the future.

This bureau interests not only members of the Chicago society, but all physicians in Illinois, as it can be seen readily how the system proposed can be extended to cover every community in the state. A large number of the physicians in the State have accounts from former patients now residing in Chicago, which can best be collected through this bureau.

For these reasons we take pleasure in giving space to Mr. McMahon's statement and hope it will be read by all our members.

To the Editor:—Over two years ago the Chicago Medical Society established the Bureau and have already spent thousands of dollars to accomplish for its members the same work done by the Leipsic Verbund for the medical profession of Germany. The experience gained by the bureau so far, shows that the organization must not only serve the Chicago Medical Society, but include the entire country in its operation.

With this end in view the name Bureau Chicago Medical Society has been changed to Bureau United Medical Societies, enabling the entire work to be operated under one head in such a way that the medical societies assume no financial responsibility, yet giving each society the advantage of experience gained and absolute protection of interests.

OBJECTS OF THE BUREAU.

1. The collection of physicians' accounts on a commission basis.
2. The printing of physicians' stationery, as letterheads, envelopes, cards, card indexes, file systems, etc., at nominal prices.
3. Department for buying, selling, exchanging medical practices, etc. at a reasonable commission charge.
4. Department for legal defense of physicians in malpractice suits.
5. To aid in maintaining a reasonable renumeration for life insurance examinations.
6. To assist in securing proper medical legislation.
7. To correct medical charity abuse.

In order that the bureau may be self-sustaining and develop along natural lines of business growth, each class of work must be undertaken singly and the details thoroughly worked out. The bureau has now under successful operation the Collection and Printing Departments. The Exchange Department will soon be established and the Defense in Malpractice Suits taken up as soon as the business expands into other states (the latter work now being done for the profession by the Illinois State Medical Society). Efficient service is now rendered in the Department of Medical Charity Abuse through the work of the Collection Department.

COLLECTION DEPARTMENT.

The books of the bureau in the general office may be audited at any time and must be audited at least once each year by an auditor appointed by the Chicago Medical Society and a report furnished the trustees of the society.

Before any branch office is established in any city, arrangements must be made with the medical society of the city or county in which the branch office is to be located for an audit of the books by the medical society.

The manager of the bureau shall at all times maintain adequate and acceptable bond for the protection of the Chicago Medical Society and all physicians who patronize the bureau. Whenever any branch office is established in any city, the bureau shall furnish and maintain adequate and acceptable bond to the local medical society.

All accounts are handled by bonded attorneys and collectors, of which the bureau already has over a thousand on its list, located in the United States, Canada and Mexico.

Any physician having accounts listed with the bureau or any of its branch offices may inspect the general ledger and examine the records and files concerning his personal business.

Reports are furnished each physician having accounts on file with the bureau every ninety days on the following dates: January 10, April 10, July 10, and October 10. Settlement shall be made with each physician on these dates for collections made during the preceding quarter.

All accounts are collected on a commission basis. While the rate of commissions may seem too high, experience has shown that good work cannot be done and settlements made promptly to the doctor for less.

The bureau now has accounts on file from over 1,000 physicians representing some $200,000 worth of accounts. Many of these accounts were of the worst sort when they were given the bureau for collection, accounts against persons who had been declared bankrupt, against persons long dead, against persons in prison and against persons whose whereabouts have been unknown for years. These accounts were accepted and worked out at great expense, so that the bureau learned to place certain restrictions on the sort of accounts filed. On the total accounts filed with the bureau there has been collected about $50,000, or 25 per cent. of the total amount filed for collection. This does not represent the correct proportion of

accounts being collected now. Accounts are now of a better sort and the experience gained is bearing fruit, so that in the time just past during which $25,000 worth of accounts were filed over $12,000 were collected, almost half of the bills being collected.

In the beginning there were many problems to solve before the work could be handled in any way near a perfect manner. A complete filing device which would quickly give us the information wanted in regard to any one of over 20,000 names was needed. The system had to be changed two or three times before our present perfect system was devised. We have at last adopted a numerical file giving the doctor a certain number and his debtor a number following, as: 26-1, 26-2 26-3 and so on. This gives us an elastic file to which accounts may be added from time to time without discord. Some such system was absolutely necsary, for we daily received remittances with nothing but the name to identify it. Occasionally nothing but the currency, an unsigned letter and the post mark as a clew to its ownership. Then, the problem of dividing the city into districts so that collectors could conveniently handle claims sent in has required no little thought and work to bring this feature to a practical working basis.

The first few months the printers'-bills consumed more than our profit. To overcome this a printer was secured and about $500 invested in a press and type. This proved to be the thing needed. The bureau could now have everything wanted at less cost than originally was paid for the actual necessities. Not only this, but the doctors are giving us their printing, so that to-day the printing department, which is equipped with a battery of Gordon presses, occupying space 24x60 at 302 Thirty-fifth Street, is making as much clear money as the collection department, and the society will eventually be repaid for every dollar invested.

JOHN W. MCMAHON, Manager.

THE MOST CONSPICUOUS FAILURES OF MENTAL AND FAITH CURE TREATMENT.

As an ordinary rule, the members of the medical profession have not taken the trouble to combat the fallacies of the cults which have deluded their followers for many years with false statements as to the value of all the varied forms of "mental treatment," "suggestion," "encouragement," etc.; but every once in a while some authority who has witnessed the failure of these efforts is constrained to state some facts. The last and one of the most convincing statements comes from Dr. F. W. Langdon, Medical Director of the Cincinnati Sanitarium, who makes the following statement in the last annual report of that institution:

"Psychotherapy has come to be a word 'to be conjured with' to an increasing degree of recent years. Psychic treatment, otherwise known as mental treatment, suggestion, encouragement, etc., has always been employed, and always will be, with a varying degree of success in the treatment of all diseases. The personality of the physician and of the nurse; the surroundings; restraints, moral and physical, adapted to the

good of the patient; the regular and proper administration of foods, baths, exercise and medicines, all have their 'psychic' influence on the patient, and will continue to have, along with their equally important physical effects.

"The most conspicuous failures of all forms of 'mental treatment' when used alone have been in the treatment of the insanities. This, of course, was to be expected, since it is the 'psyche' of the patient that is needed to promote cure; and it is that 'psyche' which is unavailable by reason of the illness present. To ask a patient with the symptom aboulia—to use his 'will-power' which is absent, or a patient with delusion to 'be reasonable'—is much like expecting a watch to tell the time of day by its facial appearance when the 'works' have been sent to the jeweler for repair. To be sure, such a watch necessarily indicates the right time *twice daily*. So the patient may be 'right' for some hours daily *when asleep*.

"There is no specific treatment for 'diseases of the mind,' nor may we ever hope to discover such. Management of the patient is a matter which demands the exercise of the broadest medical knowledge and skill."

A CORRECTION OF MISSTATEMENT REGARDING THE UNIVERSITY HOSPITAL OF CHICAGO.

THE JOURNAL is pleased to publish in this issue a communication received from Dr. Bates in which he corrects a misstatement made in a letter received from him and published in the April issue. His first communication, as explained in his last letter, erroneously makes the statement that the Jenner Medical College had been affiliated with the University Hospital.

THE JOURNAL has no desire to unjustly misrepresent any organization.

Correspondence.

RECIPROCITY OF MEDICAL LICENSURE.

SPRINGER, NEW MEXICO.

To the Editor:—That the form of reciprocity adopted by the Illinois Board of Health is an unjust and unfair discrimination, and that it works an unnecessary hardship upon a certain class of Illinois physicians is certainly evident to any one who has given the subject any thought and especially so to one of this class who has attempted to take advantage of its supposed benefit. To the physicians of Illinois who registered prior to July 1, 1899, reciprocity is simply a snare and a delusion.

In discussing this subject it would be well to first take into consideration the object and purposes of medical legislation as it pertains to the legal right to practice medicine and surgery, also to consider the object

and purposes of reciprocity. As the States are clearly given the right to regulate the practice of medicine within their own borders by the Constitution of the United States it would certainly be superfluous to enter into a verbose discussion of that phase of the subject. It is fair to assume that the primary and ultimate object of medical legislation is to raise the standard of medical education and to protect the people from the practice of poorly qualified, unethical, and immoral practitioners. I think it is the generally accepted idea that the object and purpose of reciprocity is to carry out this fundamental principle of medical legislation and at the same time to enable a physician residing in one state to move to another state with the minimum amount of trouble in proving to the board of that state his qualification and fitness there to practice. If qualification—both educationally and ethically—is not to be the sole standard by which the applicant is to be judged then the matter of reciprocity assumes a different phase. And if one is to judge from the attitude of some of our State Boards, merit is not the only criterion by which the physician is judged. For instance, some boards announce that they will reciprocate with other states who will do so with them. How this affects the applicant surpasses our feeble understanding, and is certainly retaliative and revengeful in character, and unbecoming the medical fraternity. No one who has the love of medicine at heart could advocate any form of reciprocity that tends to lower the standard of medical education and it would seem that no one who is in genuine sympathy with the medical profession would favor imposing any unnecessary expense and hardships upon the members. What we need is not an increase in the number of physicians but an increase in that genuine, true, fraternal spirit of justice that should predominate our profession. And I might say what we need on our state boards are men who are in accord with this spirit and who are willing to place merit above red tape and qualification above political preferment.

That there would be a difference of opinion upon the question of interstate reciprocity is but the natural sequence of the different requirements of the different states and of the different views taken by various people. The writer would surely be narrow and uncharitable if he were not willing to accord to any member of any state board the right to favor and advocate such measures as his judgment dictated. Dr. Egan, secretary of the Illinois state board, avers that all who favor a different form of reciprocity than that adopted by that board do so from purely selfish motives and that they are contemplating a change of location. If his philosophy is true that an advocate of a measure becomes selfish simply because he would be benefited by it, then selfishness not only reigns supreme in our land but it must be especially rampant in those states that reciprocate on any other basis. And furthermore our revolutionary forefathers were selfish in opposing the British tea tax; and their acts were selfish and not patriotic, their motives were avaricious and not prompted by a love of country. The writer was raised in the belief that it was a privilege of any and every citizen of this country to advocate such laws and measures as he pleased, but it seems as if he has

been woefully misled and that he had no right to question the powers that be without being branded selfish.

The sum total of the status of reciprocity is this, that the physicians of Illinois who registered prior to July 8, 1899 are disfranchised of the rights of reciprocity, and why? As stated before, if qualification is the sole standard of his rights, and if he is unworthy, very well, and no one should enter a complaint.

If it is true that his education and qualifications are such as to unfit him for this favor then it is certainly indeed a sad commentary upon this class of physicians. If, however, on the other hand, they are deserving, what has been their iniquity that they are made the mark of the board's displeasure.

Now as to the legal status of the case. Dr. Egan claims that the law will not permit him, or rather the board, to reciprocate on any other basis than that of an examination; but the following extract from the Bulletin of the Illinois State Board of Health, of August, 1906, will throw some light on the subject: "The Illinois medical practice act does not provide for reciprocity. The board reciprocates under its general powers, but only on licenses issued after examination, as the medical laws of Illinois require an examination." Now, if the law does not provide for any reciprocity at all, isn't it a little strange that they (the Illinois board) would find a way to reciprocate upon a basis to suit themselves? Furthermore, have they ever made any attempt to protect the physicians who registered before an examination was required, or have they willingly sacrificed their rights?

As to the practical workings of reciprocity. Dr. A, a graduate of a recognized medical college, but unfortunate in receiving his license before an examination, was required and after practicing in Illinois for ten or fifteen years, is obliged to change climates, and upon writing to the secretary of the board of a neighboring state, is informed that he can register there under qualification No. 2, but on sending his application blank for endorsement, to the secretary of the Illinois board, he finds out that the board of the other state was not competent to pass upon its own applicants and furthermore, he was surprised to find that his own state board didn't think him worthy of endorsement, for surely on no other grounds would it have been refused. Dr. B is a graduate of the same school as Dr. A, only a year or two later, but fortunately he received his license by examination and he can register by reciprocity in about seventeen different states.

Whence came all of this difference in the qualifications of the two physicians? If the Illinois Board would simply refuse to admit applicants on the basis of an examination it would not be so bad, but when they refuse aid or assistance to its own physicians it seems that they are exercising an autocratic power.

In conclusion I wish to say that I am not an applicant for license in any state, and further than that I never made an application in any state which was turned down, so I have no ax to grind.

E. I. WHITEHEAD, M.D.

ANOTHER COUNTY HEARD FROM

Dr. Carl E. Black, Councilor, Sixth District, Illinois State Medical Society, Jacksonville, Ill.:

Dear Doctor:—Herewith are the answers to the questions asked by the Council of the Illinois State Medical Society in your letter of March 17, 1910, as voted unanimously by the Morgan County Medical Society at its regular meeting the 14th inst., twenty-five members being present:

1. Do your members endorse the position of the Council on Medical Education of the A. M. A. on the condition of medical education in Illinois as expressed from time to time during the last four years and especially at the Chicago conference, March 1, 1910? (See ILLINOIS MEDICAL JOURNAL, March, 1910.) YES.

2. Are your members in sympathy with the campaign for better medical schools and a more uniform standard of medical education which is being pursued by the Council on Medical Education of the A. M. A? YES.

3. Do you believe that the worthless medical schools of Chicago should be abolished if still found deficient after due notice to reorganize? YES.

4. Do you believe that too many poorly qualified doctors are licensed in our state? YES.

5. (a) Do you think one board (the Illinois State Board of Health) should continue to supervise both the public health and the affairs of medical education (determine the standing of medical colleges, and examine and license medical graduates), (b) or do you think more satisfactory results would be obtained by separate boards, as already exist in most states? (a) NO. (b) YES, and further, it is the sense of this society that the members of the Examining and Licensing Board should not be connected with any medical school.

6. Do you believe that the executive officer of the Illinois State Board of Health should be a trained sanitarian? YES.

Respectfully,

GEORGE STACY, Secretary Morgan County Medical Society.

JACKSONVILLE, ILL., April 15, 1910.

DR. BATES CORRECTS MISSTATEMENT.

GRACE HOSPITAL, CHICAGO, April 26th, 1910.

To the Editor:—I wish to apologize to you and the University Hospital for the erroneous statement contained in my communication of February 7, which was published in April JOURNAL.

Said statement that the Jenner Medical College had affiliated with the University Hospital was based on a misstatement of the facts, and through an unfortunate oversight the mistake was not corrected.

Trusting that my apology will be accepted, I am

Yours very truly, MORLEY D. BATES.

ADAMS COUNTY PASSES RESOLUTIONS ON MEDICAL EDUCATION

QUINCY, ILL., April 11, 1910.

To the Editor:—At the meeting of the Adams County Medical Society, held to-day, the following resolution was unanimously adopted, and I hasten to send it to you:

WHEREAS, It has been brought to the attention of the medical profession and the public by the Council on Medical Education of the American Medical Association, after two duly authorized and carefully conducted investigations of each medical school in every state, that the United States has almost as many medical schools as all other countries, and that many of these are little more than diploma mills, and that while Illinois has several medical schools which are equal to any in the country, she also has a larger number of lower-grade schools than any other state, and has been classed by said Council as one of "five especially rotten spots which are responsible for much of the bad medical instruction," and that on account of the large number of inferior medical schools this country is supplied with more than twice the number of physicians required or to be found in any other country, and that many of these were graduated from schools where it was impossible to secure an adequate medical education; therefore be it

Resolved, That we heartily endorse the work of the Council on Medical Education and promise our support to the carrying out of its recommendations.

Resolved, That we call attention of our State Board of Health, which is duly authorized under the laws of the State, to determine what medical schools are "not in good standing," to the serious conditions of medical education in Illinois, and request that in the interest of the public and of medical education in general, and especially of the medical interests of Chicago, which with proper support will become the great medical center of this country, that these conditions be corrected as soon as due notice can be given to the unacceptable schools; and be it further

Resolved, That in our judgment the cause of medical education in this state will be advanced by establishing a single board of medical examiners which shall be separate and apart from the Board of Health, whose duties are now so multiplied that none of its departments are up to the standard which a leading state like Illinois should maintain.

C. A. WELLS, Secretary Adams County Medical Society.

ANNUAL MEETING AT DANVILLE

DANVILLE, ILL., May 1, 1910.

Doctor:—Every indication points to a rousing state meeting in Danville. In reply to letters and printed announcements we have had many favorable personal letters.

If it is a question of attending either the state or national meeting, decide in favor of Illinois. Your state society confers special privileges and is active in its efforts on your behalf.

The program, you will find, is filled with papers by men of local and national reputation. Personal contact, so important to medical enthusiasm, is to be found in *your* next state meeting,

MAY 17TH, 18TH AND 19TH.

Make another effort to secure a new member for your local society.

Fraternally,

A. MERRILL MILLER, Chairman Publicity Committee.

STEPHEN C. GLIDDEN, General Chairman.

COUNTY AND DISTRICT SOCIETIES.

ADAMS COUNTY.

The December and annual meeting of the Adams County Medical Society was held in the Elks' club rooms, Quincy, Monday, December 13, with second vice-president Knox in the chair. Others present were Drs. Gilliland, Nickerson, Koch, Spence, Ball, Brenner, W. W. Williams, Ericson, Haxel, Bates, Whray, Christie, Center, Reticker, Gabriel, Pendleton, Rice, Collins, Pfeiffer, Shawgo, J. B. and Kirk, Kidd, Miller, Knapp, Pittman, Werner, Bloomer, Mitchell, Whitlock, Ashton, Hart and Wells. The usual minutes were read and the bills allowed. The illness of Dr. Jos. Fletcher, Mendon, being brought to the attention of the society, the secretary was directed to send him a Christmas letter of cheer and a remembrance of flowers. The secretary's report for the year 1908 was read and showed a membership in good standing of seventy-one. Four were dropped for non-payment of dues, two were lost by death. The secretary and treasurer of the library committee made their report, which showed a small balance in their hands after meeting the fixed charges. Adjournment at noon to the Hotel Newcomb was had, after which the election of officers occurred and resulted in Dr. D. M. Knapp, Mendon, being chosen president; Dr. T. B. Knox and Dr. F. T. Brenner were elected unanimously first and second vice-presidents, respectively; Dr. Wells, secretary, and Dr. Christie, treasurer, were unanimously reelected. Dr. James H. Pittman was chosen unanimously as a censor for a term of three years, and Dr. E. B. Montgomery was in like manner chosen a member of the library committee for a term of three years. At the conclusion of the election Drs. Gilliland and Christie were appointed as a committee by the president to escort President-elect Knapp to the chair, who, in assuming his office, made a neat, energetic little speech, in which he promised his best efforts in maintaining the present high standing of the Adams county society. The remainder of the afternoon was given over to short clinical reports, Dr. Gilliland reporting a case of birthmark and his treatment; Dr. Nickerson a case of morphinism treated by the "Towne" method recently publicized, and Dr. Koch a case of sclerema neonatorum in which recovery was obtained. Dr. Ashton read an able paper on "The Status and Duty of the Medical Officer," which elicited general discussion and brought forth a request that it be forwarded to the A. M. A. *Journal* for publication. Dr. Ashton having indicated that he would remove from the city within a short time, the president and members of the society, by a rising vote, wished him good luck and prosperity in his chosen field.

Adjourned.

CLARENCE A. WELLS, Secretary.

Regular Meeting, April 11, 1910.

The regular April meeting of the Adams County Society was held in the Chamber of Commerce rooms on the 11th. The entire day was given to Dr. John L. Porter's clinic at Blessing Hospital in the forenoon and his scientific address before the physicians in the afternoon. Among those present at the clinic and afternoon session were Drs. D. M. Knapp, president; Shawgo, J. B. and Kirk, Nickerson, Rice, Whitlock, Schullian, Ericson, Brenner, Johnson, Pittman, Gabriel, Bates, Hart, Pfeiffer, Reticker, Becker, Koch, Knox, Mercer, Ray and W. E., Shepherd, Ross, Montgomery, Ball, Bloomer, Gilliland, Center, Williams, Bierne, and Wells. Some of those present from other cities, Drs. Black, Jacksonville; Smith and Miller, Pittsfield; McConnell and Peacock, Baylis; O'Neal, La Grange, and Frame, Ewing. This is the third visit Dr. Porter has made to the Adams County, also the third clinic held. In interest and profit this clinic was the best of all.

Some sixteen or seventeen orthopedic cases were seen and examined, including cases of talipes, poliomyelitis, tubercular hip joints, arthritic deformans, flat foot, etc. Two cases were successfully submitted to operative interference. Somewhat past the noon hour adjournment from the clinic to the Hotel Newcomb was had for luncheon. In the afternoon the regular business of the society was transacted. The matter of the resignation of Dr. A. W. Meyer from the society was laid on the table, after a special committee had reported futile efforts made to get him to reconsider. It was reported that Dr. Meyer desired to engage in some lodge or contract practice. Resolutions favoring the proposed bill of Senator Owen anent the establishing of a department of health were read and passed, and copies thereof ordered sent to our representatives in Congress. Resolutions endorsing the stand and work of the Council on Medical Education of the American Medical Association were presented and unanimously passed. Dr. Porter was then introduced and took for his theme, "The Modern Treatment of Tuberculous Joints," and as the title indicates, so was the matter presented by this able expert and leader in his line. At the conclusion of the address a most hearty vote of thanks and appreciation was given Dr. Porter both for his address and clinic. He responded by voicing his pleasure at again being with his fellow members of the Adams County Branch.

A vote of thanks was given Miss Wheeler, the nurse, and the authorities for the privilege of holding the clinic in Blessing Hospital. The matter of instructing our delegate in regard to his vote on the proposed change of time for holding the state convention was held over until the next meeting. A committee was appointed to draft resolutions on the death of our former member, Dr. J. G. Williams.

Adjourned. CLARENCE A. WELLS, Secretary.

CHAMPAIGN COUNTY.

The regular monthly meeting of the Champaign County Medical Society was held April 14 at the University of Illinois, the program for the meeting being furnished by a committee of the university faculty. The society was called to order by Acting-President Johnson at the Bacteriological Laboratory at 2 p. m. A number of specimens illustrating tuberculosis, typhoid fever, trypanosomiasis and malaria, were demonstrated by Prof. T. J. Burrill and his assistants. This demonstration was concluded promptly at 2:50 p. m., and the society was conducted to the Chemical Laboratory, where an illustrated paper on "Metabolic Influence of Copious Water Drinking with Meals" and a second paper on "The Metabolism of Dogs Subjected to Repeated Fasting" were presented by Prof. P. B. Hawk, and a paper on "Nutrition" was presented by Prof. H. S. Grindley. Following the presentation of these papers, the laboratories and methods of the State Water Survey were demonstrated by the Director, Prof. Edward Bartow. This session was concluded promptly at 3:50 p. m. and the society was next conducted to the Laboratory of Physiology, where Professor McClellan and his colleagues demonstrated by experiment the action of adrenalin on the blood pressure of the dog, the fatal effects of air embolism, and protein poisoning and anaphylaxis in guinea pigs. Promptly at 4:25 p. m. the society was conducted to the Laboratory of Zoology, where Prof. H. B. Ward demonstrated a number of specimens from his collection of animal parasites. Microscopic preparations of the parasites of syphilis, kala-azar, and sleeping sickness, a number of the flukes, and various tapeworms were shown. A beautiful series of microscopic preparations illustrating the successive steps in the journey of the hook-worm larva, from its penetration through the skin to its final lodging in the digestive tract, was also demonstrated by Professor Ward. The series was one prepared by Professor Looss during his experimental study of this disease. At 5 p. m. the society was conducted to the University Club, where a buffet luncheon was served. Members present were Drs. T. J. Burrill, T. J. McKinney, Lucy Exton, T. J. Exton, J. J. Hanmore, H. C. Howard, Ellen Miner, Jennie Lyons, F. S. Diller, J. H. Alpiers, John Marten, S. S. Salisbury, W. Schowengerdt, T. A. Dicks, L. O. Sale, R. P. Dowd, J. G.

Lamb, C. S. Davis, J. Mandeville, G. W. Rice, D. Kirby, W. F. Burres, and C. F. Newcomb. Dr. Walter Scott of Foosland was present as a visitor. After a unanimous vote of thanks to the university committee for the afternoon's program, the meeting adjourned. N. M. BAKER, Secretary.

COLES COUNTY.

Coles County Medical Society met at the Dole House, in Mattoon, Ill., April 19, 1910, with President C. B. Voight in the chair. Minutes of the previous meeting read and approved. Under the head of unfinished business, Dr. Bennett, chairman of the committee, presented the following:

Resolved, That the Coles County Medical Society hereby approves a uniform fee of $5.00 for city insurance examinations, in the case of such companies "Old Line" or otherwise as pay other fees. Examinations may be made at the discretion of the examiner, provided that no member in good standing will make examinations for any company for less than the maximum fee paid by that company for similar service.

The resolution was adopted by the society. At this time a banquet was given at the Dole House and the following members were present: Drs. Voight Freeman, McDonald, Ferguson, Dudley, Montgomery, Iknayan, Dudley, Craig, A. T. and Ed. Summers, F. P. Beck, Bennett, Bell, Nolan, Kleckner, Vanatta and Bryan. Visitors: Dr. Epperson, Kansas, Ill.; Dr. Taphorn, secretary of Effingham County Medical Society; and Dr. Hardinger, Gays, Ill.

The following responded to toasts: Drs. Vanatta, Bell, Dudley, Montgomery, Ed. Summers, Iknayan and Bryan; T. O. Freeman, toastmaster. The Coles County Medical Society will entertain the Æsculapian Medical Society of the Wabash Valley at the May meeting, to be held at Mattoon.

Adjourned. R. H. CRAIG, Secretary.

COOK COUNTY.

CHICAGO MEDICAL SOCIETY.

Regular Meeting, Feb. 9, 1910.

At a regular meeting of the Chicago Medical Society, held February 9, the following papers were read: "Hyperchlorhydria," Fenton B. Turck; "Colitis" (by invitation), Geo. D. Kahlo, French Lick, Ind. Discussion opened by A. R. Elliott, A. C. Croftan and Henry B. Favill. "Stovain Anesthesia in Chicago," Henry F. Lewis. Discussion opened by Joseph Beck, G. F. Thompson, and D. N. Eisendrath.

Regular Meeting, Feb. 16, 1910.

At a regular meeting of the Chicago Medical Society, held February 16, the following papers were read: "Rectal Ether Anesthesia" (with demonstration), Jas. F. Churchill; "Operations on Handicapped Patients (by invitation), Geo. W. Crile, Cleveland, Ohio. Discussion opened by Emil Beck (Medical Aspects), J. B. Murphy, and L. L. McArthur. "Surgery of Aneurysm of the Aorta and Its Branches" (by invitation, illustrated), B. Merrill Ricketts, Cincinnati, Ohio. Discussion opened by D. W. Graham, A. J. Ochsner, and others.

Regular Meeting, Feb. 23, 1910.

At a regular meeting of the Chicago Medical Society, held February 23, the following papers were read: "The Future of the Campaign for Public Health" (by invitation), C. E. A. Winslow, Boston; "Prognosis of Angina Pectoris" (by invitation), Frederick Forchheimer, Cincinnati, Ohio. Discussion opened by Geo. W. Webster, Robt. Babcock, J. M. Patton, and Frank Billings.

Regular Meeting, March 2, 1910.

At a regular meeting of the Chicago Medical Society, held March 2, the following papers were read: "Sterility in the Male," Wm. T. Belfield. Discussion opened by Louis Schmidt. "Sterility in the Female," E. C. Dudley; "The Treatment of

Gonorrhea with Reference to the Question of Sterility," B. C. Corbus. Discussion opened by Wm. Baum.

DISCUSSION OF DR. CORBUS' PAPER

Dr. Frederick Baumann:—Concerning Dr. Corbus' paper, I would like to make the following remarks:

First, the urethra is closed, in a state of rest, and the first urine which leaves the bladder during the act of micturition has to pass through the whole length of this channel, and will naturally wash out and contain pathologic products from any part of its passage. To a person, therefore, who has made a study of those conditions, it is impossible to employ the two-glass test, with a view of determining the location of a gonorrheal infection within this channel, as Dr. Corbus advises us to do. Cloudiness of the first portion and clearness of the second portion of urine simply points toward the disease of the urethra and a healthy state of the bladder. But in acute gonorrhea, in cases in which Dr. Corbus advises us to use this test, the production of pus is usually so profuse that both portions of urine are turbid, even in those cases where the disease is confined to the anterior urethra. The doctor must then, furthermore, have been mistaken in his diagnosis; he most probably experimented with recurrent chronic cases of gonorrhea and not with fresh and acute cases.

Second, while the finding of gonococci in the urethral discharge puts the diagnosis of gonorrhea beyond reasonable doubt, the absence of gonococci is no proof that the patient is free from gonorrheal infection of the urethra.

Third, Dr. Corbus recommends in his method of treatment a well-advertised but chemically little active and uncertain remedy, which produces little reaction. He apparently forgets that the treatment of gonorrhea should primarily help the patient, and that the doctor must make use of scientific facts in his work, even if their material benefit is not directly apparent.

The community allows the physician more privileges than it does to any other professional man; it virtually gives him his fellow-man as an experimental subject. It puts the health and indirectly the physical wealth of the people in his trust, and should, therefore, be able to demand at least as much education, accuracy and honesty from the doctor as it does from the investigator at the university, who experiments with plants and animals only.

It is true the investigator at the university receives his remuneration through persons capable of judging and valuing his work, and he is in this respect entirely independent from his experimental subject.

It is different with the physician. He receives his remuneration from the experimental subject direct, and his financial success is therefore primarily dependent upon a person incapable of judging the true value of the work.

The importance of this difference is easily understood if we take into consideration the fact that the different scientific data do not stand in the same relation to the mind of the patient as they do the disease of the patient. Some scientific facts which are of minor importance in relation to disease can easily be demonstrated and made to appeal strongly to the mind of the patient, while others of the utmost importance for the safe guidance of a patient through an attack of disease make little or no impression on the mind and cannot be easily demonstrated.

The experimental subject of the physician recognizes itself as an intelligent being; it draws conclusions, and it is willing to pay for what it thinks it is getting. This holds true even if we make the patient feel better at the expense of his ultimate recovery. The temptation, therefore, is great to make it a special privilege for a scientific fact to be admitted to the dominion of gonorrheal therapeutics, or to give unwarranted prominence to certain scientific facts which will promote, directly or indirectly, the interest of the doctor. The conclusions drawn from a group of these selected facts are obviously at variance with those of the biologist, with those of true science, and very often also with those of common sense.

It is to some experts that thanks are due that the treatment of gonorrhea still stands with one foot in the middle ages, because the truly scientific physi-

cian is for material reasons forced to follow such leaders, at least partly, and it is well that he does, otherwise our therapeutics would show a far more pitiable picture in the light of true science than it actually does.

From a scientific point of view, gonorrhea, as we see it in our clinical work, is the apparent product of a struggle between an attacking unicellular organism and a defending, highly specialized, cellular state. The doctor, in trying to guide the course of this combat, the infection, is limited to the production of injury and the injury intended for the disease-producing germs will equally affect the patient. The results, therefore, of the application of any therapeutically active treatment will be a temporary increase in the clinical symptoms; that is, in other words, the action of a therapeutically active drug and that of the disease-producing germ are, in the main, identical. The difference lies simply in the fact that the dose and action of a drug can be measured and controlled, while an infection, once started, is beyond our control.

The therapeutic success of any medical treatment is, therefore, on one hand, dependent upon the scientific training of the doctor, and, on the other hand, upon the vital resistance of the patient. Or, to come right down to it, we have only one remedy, only one curative agent, namely, the patient. But a treatment based on the pathology of this disease is just, by its accuracy and efficiency, dangerous in the hands of the untrained.

Regular Meeting, March 9, 1910.

At a regular meeting of the Chicago Medical Society, held March 9, the following papers were read: "Autovaccines in Traumatic Infections" (preliminary report of three cases), C. R. Forrester. Discussion opened by Thomas L. Dagg. "Dilatation of the Stomach and Chronic Benign Ischochymia" (by invitation), Max Einhorn, New York. Discussion opened by F. B. Turck, Bertram W. Sippy, and M. H. Mack.

Regular Meeting, March 16, 1910.

At a regular meeting of the Chicago Medical Society, held March 16, the following papers were read: "The Diagnosis of Prostatic Lesions," Louis E. Schmidt; "Perineal Prostatectomy," Alex. D. Ferguson;" "Suprapubic Prostatectomy," Arthur Dean Bevan. Discussion opened by Wm. T. Belfield. (History and development of Prostatic Surgery), G. F. Lydston; (Choice of operation), J. B. Murphy, Gustav Kolischer, Paul Gronnerud and Wm. Fuller. Demonstration—New Apparatus for Complete Drainage of the Bladder Following Either Suprapubic or Perineal Cystotomy, L. W. Bremerman.

Regular Meeting, March 23, 1910.

At a regular meeting of the Chicago Medical Society, held March 23, the following papers were read: The program consisted of a Symposium on Postoperative Complications, "Shock, Along General Lines" (by invitation), M. G. Seelig, St. Louis; "Gastrointestinal Complications," D. N. Eisendrath; "Postoperative Pulmonary Complications," Evarts Graham; "Experimental Shock Compared with Clinical Shock," Fenton B. Turck. Discussion opened by S. A. Matthews, R. M. Parker and E. B. Fowler.

Regular Meeting, March 30, 1910.

At a regular meeting of the Chicago Medical Society, held March 30, the following papers were read: "Demonstration of Interesting Surgical Cases," D. N. Eisendrath; "The Tabetic and Surgeon," Geo. W. Hall. Discussion (Surgical Aspect) opened by A. D. Bevan, and (Medical Aspect) Jos. L. Miller. "Experimental Shock Compared with Clinical Shock," Fenton B. Turck.

Regular Meeting, April 6, 1910.

At a regular meeting of the Chicago Medical Society, held April 6, the program consisted in a Symposium on the Governmental Treatment of Stammering. The following papers were read: "Stammering and Its Treatment" (by

invitation), G. Hudson Makuen, Philadelphia; "Can Stammering be Successfully Treated Through the Agency of the Public Schools," Elmer L. Kenyon; "The Movement for the Treatment of Stammering in the Public Schools of Chicago" (by invitation), Miss Virginia Freeman, Chicago Normal College.

Regular Meeting, April 13, 1910.

At a regular meeting of the Chicago Medical Society, held April 13, the following papers were read: "Pituitary Thyroid and Thymus Activities," Chas. Louis Mix; "Observations upon the Effect of the Various Methods Employed to Reduce Hypertension," Jos. L. Miller; "Shall the General Practitioner use the Roentgen Rays?" Max Reichmann; "A Study of Last Summer's Baby Campaign" (illustrated), Caroline Hedger.

Regular Meeting, April 20, 1910.

At a regular meeting of the Chicago Medical Society, held April 20, the following papers were read: "The Local Effect of Gall Bladder Infections and Gall Stones upon the Digestive Tract and Liver," Frank Billings; "The Systemic Effects of Chronic Diseases of the Gall-Bladder and Bile Ducts," J. B. Murphy; "The Limitation of Gall Stone Surgery," Emil Ries. "Demonstration: Gross and Microscopic Specimens of Gall-Bladder and Liver as Enumerated in the Above Symposium," Robt. Zeit.

Regular Meeting, April 27, 1910.

At a regular meeting of the Chicago Medical Society, held April 27, the following papers were read: "Fracture of the Skull," Frederick A. Besley; "The Repair of Fractures After Splenectomy: An Experimental Investigation," A. B. Kanavel; "Fractures of the Mandible," Thos. L. Gilmer. Discussion opened by W. H. G. Logan.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

Regular Meeting, Dec. 14, 1909.

A regular meeting, held Dec. 14, 1909, with the president, Dr. Henry Gradle, in the chair. The following program was presented: Dr. J. C. Beck described a "Case of Death on the Operating Table." Dr. F. G. Stubbs read a paper, "The Septal Spur and Its Removal."[1] Dr. O. T. Freer read a paper, "Resection of Bony Deflections."[2]

CASE OF DEATH ON THE OPERATING TABLE.

Dr. Joseph C. Beck:—A man, aged 35 years, was admitted to the Cook County Hospital, with a history of either meningitis, intoxication from alcohol or a narcotic. Later the diagnosis of meningitis was made, because of the presence of a running ear, stationary pupils, slight rise of temperature, vomiting, drowsiness, and the absence of other general symptoms. I saw him on the following day and made a diagnosis of probable serous meningitis from middle ear trouble, and advised operation. The patient was prepared, ether was administered, and in twelve minutes the man was dead. All attempts at resuscitation failed. Autopsy: The brain is normal. The temporal bone shows a necrosing mastoiditis. (Demonstration of temporal bone.) The remaining portion of the mastoid was sclerotic, but the tegmen was free from disease. Chest, negative; abdomen, negative except for the absence of the left kidney from its usual place. The right kidney was cystic. The left kidney, which was very small, was found at the left sacroiliac joint. Its ureter measured only 3½ inches in length. Histologic examination shows very little good functionating structure in either kidney. (Demonstration of kidneys.) It is, therefore, very likely that the patient had uremia at the time of admission, although the urine analysis is given as negative as to albumin. I

1. Text of paper on page 597.
2. See text of paper on page 584.

believe that the small quantity of ether administered aggravated the process and caused death more quickly than if patient had been left to complete the usual course of a state of coma.

I must add that this post-mortem was made by Dr. Hunter, the expert necrologist of Cook County Hospital, who tells me that this interesting finding of the left kidney occurs very seldom.

DISCUSSION OF DR. BECK'S CASE REPORT.

Dr. J. Holinger:—It seems to me that there is a possibility for reasonable doubt whether uremia was the cause of death in this man. There was no symptom pointing to uremia during lifetime, and the kidneys as I see them here do not exclude normal function. I do not think that a deformed kidney is necessarily a badly functionating kidney. There are no acute or recent changes, which explain why he should have died *now* and not twenty years ago of uremia. The fact that no albumin was found in his urine certainly supports this view. I may be mistaken as well as not, but the reason for my scepticism is the following case:

Many years ago I performed a post-mortem on a woman, aged 36 years, who died of pneumonia of several lobes. No kidneys were found in the renal region, but instead an irregular mass of kidney tissue over the sacrum with the ureter, about two centimeters long, leading directly into the bladder. The woman never had any urinary symptoms, no uremia or anything pointing to kidney disease could be found. She had a normal heart. There was in this case absence of the vagina, uterus, ovaries and tubes. Between the bladder and rectum was a broad ligament of connective tissue, and some thickening in the middle and on both sides, representing the only trace of genital organs. Nothing in the woman's history pointed to this condition before her death.

Dr. Beck (closing):—One kidney in the stage of cystic degeneration and the other kidney small, with an absence of normal kidney structure, is extremely suggestive as to the patient having died from uremia rather than from any other cause. After twelve minutes of slow administration of ether, death could not be ascribed to the anesthetic. I reported the case because the findings were so misleading.

DISCUSSION OF THE PAPERS OF DRS. STUBBS AND FREER.

Dr. J. E. Rhodes:—With reference to the denudation of the crista, I have found the raspatory an all sufficient instrument. The overlapping of cartilage, spoken of by the essayist, is sometimes very puzzling, and denudation of the spine is very difficult until this overlapping is appreciated. When that is taken away, it is possible to get under the periosteum of the ridge after cutting along its crest. It is a very broad statement to make, and yet it is a justifiable one, that all bony deflections or abnormalities of the septum can be corrected by means of submucous resection. Many of the operations formerly performed are now obsolete. The preservation of the mucous membrane is all important, and by making a resection with that end in view, we are doing good to our patients instead of harm, even if we take away more bone than is necessary to get free passage in some cases. I think Dr. Freer's idea is to make as perfect an operation as possible, and to that end the open method, with the reversed L flap he advises, I have found adequate, inasmuch as every stage of the operation is done under the direct inspection of the eye.

Dr. C. M. Robertson:—I have been sawing off spurs all my life, and I have never had scab formation after the operation. I believe in saving the mucous membrane, and in any case where the ridge does not ascend too rapidly, you can introduce a saw, going through the bone carefully so as not to cut through the mucous membrane above it. After you get through the bone, if you will tip the saw outward, you can separate the upper part of the bone from the mucous membrane, grasp it with forceps, and peel it out. In that way you can do a submucous operation with the saw, saving the mucous flap. It is not necessary to trim the flap, because if too much membrane to cover the mound is left at the lower border of the flap it will slough off in a few days.

Where the septum rises rapidly in its deflection, you cannot use the saw, but must take the spur out in some other way. The Hajek chisel would be all right, although I would not like to have it used on me. There is always a jarring sensation of which patients complain. The chisel is also dangerous at times, because the septum will splinter. The same thing occurred with the old spoke-shave. I cannot see that the chisel has any advantage over the spoke-shave, where you place the instrument behind the spur and pull forward, the reverse procedure being employed with the chisel. It all depends on the operator whether or not a smooth surface is secured. It is impossible to make a concavity in the manner mentioned by Dr. Stubbs, because you cannot tell how much the tissue will fill up. When we paid no attention to saving the mucous membrane, I saw patients in whom the spurs removed occupied a space one inch long and one-half inch high, with no thickening at all, and years afterward the mucous membrane could not be told from normal mucous membrane.

There are certain conditions where the submucous resection is not indicated. Where there is an angular deflection, and the obstruction on the convex side can be relieved, by reflection of the septum, the old saw operation is good enough. Of course, when the deflection is irregular, the submucous operation is the only one.

I have had the experience of thinking I was cutting down on a spur, thinking I was on the floor of the nose, when I was not. I had a marked case recently where the day after the operation I was surprised to find that the entire lower angle had been left in the nose. There are many of these cases of angular deflection with a piling up of the crest. I have sawed off the crest and done a flap operation on the mucous membrane, getting a perfectly straight nose, just as in the submucous operation.

Dr. J. C. Beck:—I have made some examinations of spurs and ridges removed by the submucous route (demonstration of a histological section), and invariably I found an explanation of failure in sawing off a ridge and leaving it exposed to infection. The formation of new bone from the embryologic structures present is demonstrated. The work outlined by Dr. Stubbs is the same as that carried on by me for several years, with excellent results. I think that most of us do not make a submucous operation, but are satisfied with such a procedure as he outlines. These ridges show considerable cartilage and the formation of new bone from this cartilage, a rapid increase in the cartilage cells, with new bone cells forming at the junction. One can see, how simply sawing off a ridge will form a new ridge. To do the operation as it is done by Dr. Stubbs, infection and subsequent bone formation will be prevented.

In regard to the submucous operation. I have had considerable experience with it, and I am satisfied that the incision, as outlined by Killian, extending it far down to the floor is, in the majority of cases, sufficient. Reading Neumann's idea, as to the periosteum crossing over the ridge, explains to me the many tears I have made in removing the ridge. In splitting the periosteum over the ridge it is easy to dissect it on both sides and remove the anterior portion of the maxillary ridge. Posteriorly, there is no difficulty in cutting out the bone. I have been using the Killian forceps, breaking out the bony septum. The patient does not complain of any after-effects from this so-called brutal method. In fact, the breaking is done gently and then the bone is removed between the mucoperichondrial flaps.

Dr. Edwin Pynchon:—I think that most of us cannot always report as favorably as Dr. Robertson has on the removal of ridges with saws. I have had many patients come to me who had been operated on by others and there has been in the nose at the site of the ridge an area which did not heal properly; the mucous membrane was chronically irritated.

About twenty years ago Dr. Rice of New York read a paper on the treatment of chronic septal ulcers in which he reccommended massage. I might say that in that we had a solution for the imperfect healing of a wound after the removal of the ridge by the sawing operation. It is my belief that in the ordinary method of healing the membrane forms simultaneously over the entire area of the wound. Dr. Rice's theory was to massage it, so as to restrict healing in the center and

stimulate healing at the periphery, in other words, to cause the wound to heal from the periphery to the center. In these cases I have been pleased with the results.

The suggestion Dr. Stubbs made as regards making a slight depression, as much as possible, over the area of the tissue removed, I believe to be correct. I have found on some occasions, when I did not succeed in doing this as thoroughly as was desired, that in two days' time there seemed to be some elevation of the bone at the point where the ridge had been removed, and I have on several occasions done a supplementary operation, removing a little more bone.

As regards the after-treatment after the removal of ridges or other malformations in the nose in which the bone has been denuded: I have been for years employing the hot carbolized douche. I do not believe this to be the custom generally, but having had such uniformly beneficial results from its use, I do not hesitate to recommend it most heartily. The strength is one teaspoonful to the pint. As regards the window resection operation: It is being greatly modified and improved, and promises to be the operation of the future in a large number of those cases which have been previously operated on in other ways.

I wish to show you a few little things not previously exhibited. One is a little instrument for the introduction of gauze; a second is used in connection with the taking of stitches, where there is a tendency for the membrane to retract or where accidentally a tear is made. This little instrument will help in tying the knot. The third instrument is a special tip for irrigating the nose. It is made of metal, so that it can be sterilized. Fourth, I have modified Dr. Becks' chisel, shortening the blade and lengthening the shaft.

Dr. J. Holinger:—Dr. Freer makes an L-shaped incision. I do not like it, because it permits the lower flap of the mucous membrane to roll up, which roll later on fails to shrink. As to the ridges, there is very often, as Dr. Stubbs says, a cap of cartilage on top of the bony ridge. If you loosen the mucous membrane and periosteum, and then take out the ridge it sometimes happens that when the two sides of the periosteum fall together you find at the side of the old ridge another one, although not quite as high as the first. This has puzzled me several times. Once after I took out the packing, I opened the sack between the membranes again, and found this cartilaginous cap which was high enough to make it look like the old ridge.

Dr. B. Haseltine:—My own experience in the old days when I did sawing operations coincides with that of the speakers who have observed the reformation of ridges. I often used to find the spur returned some weeks after I had made what I thought a good operation. Dr. Beck's contribution gives us the comforting assurance that this is as it should be. The L-shaped incision with the lifting of the flap is one which I was formerly fond of but recently I have used almost wholly the anterior vertical incision as suggested by Killian. The difficulty and danger of dissecting around sharp spurs I entirely avoid by leaving such dissections until the cartilage is removed. I then insert the bi-valve speculum between the flaps and make the dissection with the field of operation in plain view. In this way all damage to flaps is avoided and postoperative perforations are unknown in my experience.

Dr. E. L. Kenyon:—I suppose we will continue to exercise our judgment in the removal of septal spurs. In spite of the advantages of resection, there is no question but that all the gentlemen here will operate on septal spurs in selected instances without raising the concave mucous membrane. The discussion has been limited practically to the non-traumatic cases. There are non-traumatic and especially traumatic cases in which the deflection plays a slight part and in which the thickening is exceedingly important. Complete extirpation of the thickened bone or cartilage between the two layers of mucous membrane is not the only means of doing away with denuded bone. This is accomplished practically as well by the careful raising of the convex mucous membrane and by preserving it intact, even though the concave mucous membrane be not separated. If this convex elevation be successfully accomplished it is often quite unnecessary to go completely through the septum. Success depends on delicacy of technic. In the cases

where the periosteum and perichondrium are easily raised, there is no difficulty, but in those instances where adhesions are persistent over a large area, the raising of the convex mucous membrane, by whatever flap incision, is a matter of great difficulty. It is here that we fail and it is here that we ought to study to excel. In proportion as we succeed in obtaining a view of the operative field as clear as that obtained by the general surgeon in operations carried on directly beneath the eye will the technic of this and other processes in nasal surgery become accurate and certain. And it is just here that we owe an additional debt of gratitude to Dr. Freer, whose technic in this respect is a positive advance in nasal surgery.

The instruments employed for the removal of septal projections may be varied in accordance with the experience of the operator. The chisel may be used, or the forceps, or the saw, but no mention has yet been made of the trephine. I presume that many operators use it, and to good advantage, and those who do will never abandon it wholly for any other instrument.

As to the necessity for resecting completely the supramaxillary crest at its base, there is no question in my mind that this is not necessary in all cases. One resects the cartillage above, also the vomer posteriorly when needed, but particularly where the ridge is prominent in front, removes most of this anterior low thickening with the trephine, and obtains practically a perfect result, and with great reduction in the difficulty of the technic.

The instruments for septal work now on the market, notably the Freer set, have one quite unnecessary defect, which could easily be remedied by the united action of such a society as this. The handle of these instruments is so thick that the view of the surface operated on is obstructed, particularly when the anterior opening is narrow. The reason for this is that there is a standard form made by manufacturers which is almost universally employed by instrument makers because of its cheapness. We might prevail on manufacturers to make this basal form thinner, and thus regularly prevent so much interference with the view by the handle of the instrument.

Dr. Henry Gradle:—My experience dates back to the days when Bosworth first recommended the sawing operation, and I saw many operations done, by others as well as by myself. There is no question but what some of them were perfectly satisfactory. Where we dealt with the septum which was but little deflected, or not at all, where the spine was tolerably sharp and well-defined, and not very broad, the sawing operation would occasionally yield perfectly satisfactory results.

The denudation of the bone is not always a great obstacle to healing, and in many instances fairly smooth healing took place, but after all this occurred only in the minority of cases, and in a still smaller minority did we get permanently satisfactory results. Very frequently the immediate result seemed to be all that could be desired, but in a month or two the old condition was restored nearly as badly as before, because we did not take out the matrix of the condition. According to Zuckerkandl, these spines are all due to displacement of the bone on the cartilage or the cartilage on the bone, or the growth of a strip of cartilage left in the groove of the bone, and if that is not taken out completely, under the stimulus of a persistent catarrh, new formation will occur and the former condition is restored, even after very satisfactory sawing operations.

I remember an extreme instance in a girl of thirteen, where I did a sawing operation, apparently with good results at the time. Later, a second operation was done by another doctor, with a similar temporary result, and a third operation was finally required and done by myself. The result then was permanent after a year, but whether patency was eventually maintained I now question. I do not believe that newly-formed cicatricial mucous membrane is always a source of irritation. This is true in some cases, at least temporarily, but not always.

If we compare the results of then with the results of now from the submucous operation, there is no question that the latter deserves preference in every instance except in a small number of cases where we deal with a sharp circumscribed spine on the upper edge of the vomer, reaching nearly to the posterior end.

In these cases it is really very difficult to dissect off the mucous membrane satisfactorily. It is even impossible when the edge of the spine is quite sharp, and in such cases, if the spine has not a very broad base, the chiseling operation, even with the sacrifice of a small amount of mucous membrane over the base of the spine gives satisfactory results. Provided we use the chisel and not the saw, it is practically as good as if we retained the mucous membrane, although the healing is never quick. But it is only in such cases where it is difficult to dissect off the mucous membrane around a well-defined sharply apexed spine that I would consider the chiseling operation without previous dissection of the mucous membrane justifiable.

I would also like to call attention to these sharp spines which burrow into the mucous membrane. They are not rare, even when the patient does not complain of obstruction. These spines give considerable trouble. Frequently such patients come with a history of an irritable nose, attacks of sneezing, sudden engorgement, all of which can be accounted for by the presence of a small sharp spine, which ordinarily does not impede the respiratory patency of the nose.

Again, this sharp spine has an important relationship to proliferative catarrh of the middle ear. My observation has been so frequent that I have no reason to doubt the relationship. I have so often found the greater deafness, or the one-sided deafness, on the side of such a spine. Of course, we cannot prove the connection, therapeutically, in all instances, because, as a rule, it is a question of permanent damage and removal of the spine will not restore the hearing. Instances are not uncommon, however, where when we get rid of the irritation the deafness has ceased to be progressive and the other ear symptoms, for instance the stopped-up feeling, disappear.

Dr. A. M. Corwin:—There are one or two points which I would like to accentuate: First, the one referred to by Dr. Holinger, the matter of the sharp ridges. There is often a little nucleus of cartilage at the apex of a sharp spur or deflection, especially where these are low down anteriorly, involving both bone and cartilage. After a submucous resection such thickened periosteum and cartilage remain as a slight projection which tends to the reformation of a spur. It is my custom to snip these off. The ample convex flap readily covers the hiatus, in the healing process.

Then the matter of cutting through the sharp crest. Each operator will continue to individualize his technic. In one case he may use a small trephine, in another the chisel, and in still another a saw. The latter is often very convenient for making a partial cut through the base of a thickened deflected crest before breaking it off with forceps. To say that any one instrument should always be used, the *sine qua non* for compassing the work of a given indication, is to speak with unwarranted narrowness. The vital matter in reducing a deflection is to do away with the deviated crest below. If we do not, the operation is but half a success. So, too, the deviation must be reduced sufficiently above, or the membranous septum after repair will still hang from the projecting line of the deviation and the deformity is but partially corrected.

There is one point which I brought out in a paper before this body a number of years ago which I think has been overlooked in the present discussion. There are noses which present in the cartilaginous part a deflected surface above which is almost flat, almost a plain surface from above down and outward. There is, I think, no need in removing this; a decent conservatism bids us save bone and cartilage where it can be done with expedition. Especially is this the case at the upper and anterior part of the nasal partition where cartilage is put for a purpose. It has been my practice in such cases to introduce high up in front a submucous knife, something after the pattern devised by Ingals some years ago but which I have modified, making a long narrow shank, slightly curved and having a small projection like that of a crochet needle, its cutting edge being on the distal or traction side. This knife is entered on the flat anteriorly through a preliminary slit made with a bistoury. This submucous knife is thus worked upward and back under the perichondrium. It is then turned so that the lateral point pierces the cartilage and is drawn forward dividing the cartilage by submucous

incision. One or two such cuts close together reduce the resiliency of the cartilage allowing the flap of cartilage to be saved, covered by normal mucous membrane and perichondrium, to swing down into line when it has been severed posteriorly, below and in front, and the rest of the deflected septum reduced in the usual fashion.

My point is that in selected cases it is needless to remove a larger amount of cartilage when it can be preserved so easily. The resulting septum is by so much strengthened at its weakest place.

Dr. F. Gurney Stubbs (closing):—It is now almost seven years since I first started to do a submucous resection for deflections. In that time I have had a varied experience with all sorts of septums, and it was not long before I was puzzled why in so many instances I found this long, narrow strip of cartilage passing back along the vomer-perpendicular-plate junction. The reason for this became apparent when I went back to the embryologic development of the septum, which really gives us the only true understanding of why we have these deflections. I do not believe that there are so many changes taking place later on in life as Dr. Freer would have us believe; most of these are due to the fact that the cartilaginous parts do not fit accurately into the grooves, and in some cases the strip of cartilage which should be included in the canal projects laterally. If the piece of cartilage, as shown by Dr. Holinger, is low down, it is part of Huschke's cartilage, or the organ of Jacobson. This cartilage is entirely in its own capsule. After removing the cartilage, a knife with rounded edges is required to cut along the edge of the bone, and then start separation further down.

I will try Dr. Freer's raspatory, but have found long ago that the knife would accomplish the same thing as easily. As to the question of leaving the mucous membrane or not, I think Dr. Robertson is to be congratulated on the universal success in his cases where the saw was used. It does not agree with my experience. I recall a meeting of the British Laryngological Society several years ago where Semon related his experiences, which were unpleasant rather than pleasant. He said, among other things, that immediately after the operation he imagined he had a perfect result, but that not long afterward the condition was as bad as before. There is no question but what, where the mucous membrane is sacrificed, there is a greater chance of having these annoying conditions occur.

I have never seen splintering of bone occur and I have used the chisel as much as anyone. If your chisel is sharp and you use it with caution, you can manipulate it easily and you will not have a fracture occurring. Use little force before you attempt to break loose the bone. As to the jarring, that is not worth paying any attention to in the argument. We have all stood it from the dentist before the days of the inlay, and we know that it did not hurt. It is merely unpleasant, and the patient will put up with it as long as it is not painful.

The traumatic spur or deflection does not deserve the attention which has been given to it.

The after-treatment is unquestionably shortened where we put back the mucous flap. In a few days we are practically through with the patient. Where the mucous membrane is sacrificed, the patient comes back to us, probably for weeks, with an annoying discharge and exuberant granulations. It seems to me that there is more puttering in rhinology than in any other specialty in medicine. Swabbing and irrigating and using an applicator is not only unsurgical, but is likely to produce infection. That is an instance of what is being done in many nasal operations to-day. It is nonsense, and even criminal. It is better to consume a few more minutes in lifting the flap, removing the spur and putting the membrane back. In a few days you have a normal septum and the additional procedure is justified, not only so far as we are concerned, but particularly so far as the patient is concerned.

Regular Meeting, Feb. 15, 1910.

A regular meeting was held Feb. 15, 1910, with the president, Dr. George E. Shambaugh, in the chair.

SUPPURATIVE EAR DISEASES IN DIABETICS.

Dr. Otto J. Stein, Chicago.

Abstract:—Three illustrative cases are reported in order to show various phases of the subject:

Case 1.—A woman, aged 21 years; history of bilateral suppuration of the ears for two years; extreme destruction of drum membrane, ossicles, etc.; profuse purulent discharge; severe eczema of meati, auricles and abdomen; dry skin; polyuria; polydipsia; recurrent furunculosis; sugar, diacetic acid and acetone in urine. After a few weeks' treatment dietetic, hygienic and local, preparatory to a mastoid operation patient suddenly developed acute ear symptoms on one side and for one week presented a typical clinical picture of infected sinus complication. No operation was performed; death; no autopsy.

Case 2.—A Jew, aged 62 years, a diabetic for three years, developed an acute otitis media with pronounced mastoid involvement. Early myringotomy and energetic measures to rapidly reduce the inflammation in connection with a regulated diet and hygiene resulted in a complete restitution of the ear without an operation or serious changes. One year later: no recurrence; hearing good; sugar, 1.5 per cent.

Case 3.—A woman, aged 34 years, with chronic suppurative otitis media bilateral for years, probably since childhood. The history indicating that the diabetes has existed some twelve years. Under diet and hygiene the sugar, diacetic acid and acetone were reduced to *nil;* and then both ears were operated on after the method of Heath of London; chloroform anesthesia. Both mastoids were sclerosed, antri small, very deep and lined with a pyogenic membrane full of pus and débris. Pense flap was employed. Noteworthy is the fact that the operation lasted three hours, that there was primary healing of the posterior wounds and that epidermization progressed as in any ordinary case. One year later shows hearing much improved, right ear dry since operation and left ear occasionally wet but of short duration and at which times either sugar or acetone may be present.

DISCUSSION

Dr. C. M. Robertson:—These cases, when the discharge begins, are very much like the cases that complicate influenza, where there is a large destruction of tissue in a very short period of time. The resistance of the body is *nil*, and there seems to be a peculiarity in regard to different individuals. The patient may have much sugar, with the presence or absence of diacetic acid or acetone, and healing take place promptly. In other cases the tissues, after the operation, lie as if dead, and most operators treat the wound as an open one, because if they close the wound the tissues slough. Any anesthetic used must not irritate the kidneys, therefore ether is contraindicated. Chloroform or gas should be used. In one case, reported by Dr. Stein, the operation lasted over three hours. It is the first case I have ever heard of that survived where the operation lasted more than forty-five minutes or an hour. The percentage of cases that terminate fatally is very high, probably sixty to seventy-five per cent. These cases must be differentiated from cases that are tubercular. In a tubercular ear you get a better result after operations than in a diabetic ear. Sinus disease, brain abscess and meningitis occur often in these cases. In nearly every case of diabetic mastoiditis an epidural abscess with thrombosis of the lateral sinus is present. More patients die from this cause than from infection of the internal ear or labyrinth. It seems to make no difference whether the eye grounds show a diabetic change or not. There seems to be no particular line from which conclusions can be drawn as to whether or not the patient will get well. Young people, of course, are more liable to die than are older people, although most of the cases reported have occurred in people over fifty years of age.

AUTO-VACCINES IN NASAL ACCESSORY SINUS INFECTIONS.

FRANK BRAWLEY, M.D., CHICAGO.

It is my purpose to-night to make a preliminary report of some of my work on the treatment of nasal accessory sinus infections by means of auto-vaccines. I have been so much encouraged by my results that I hope to be able to stimulate others to investigate this subject so that we may determine the exact value of this treatment when used for the accessory sinuses.

My plan for obtaining the specimen of infectious material has been to thoroughly irrigate the nasal cavities with warm sterile physiologic saline solution, then to pass a sterile silver tube attached to an aspirating syringe into the sinus and so withdraw the contained secretion. If direct aspiration was impossible, I obtained the pus by use of the suction device which I presented to this society several years ago. The material is placed in a sterile bottle and sent to Dr. Thomas A. Dagg, who has made all of my vaccines. It requires four days, on the average, to obtain the finished vaccine. It is then administered about every fifth day with a sterile glass syringe. The initial dose should not be more than half the usual dose of the organism in question. For instance, if staphylococci are found 250,000,000 are injected instead of the usual 500,000,000. If the general and local reactions are slight, the full dose is given 5 days later. An attempt was made to give the injections on the day following a day of general depression in order to clinically strike the rise in the opsonic index. If this depression occurred on the usual injection day, the patient was told to appear on the following day, provided the depression had lessened or disappeared.

Mixed infections require a smaller dosage than staphylococci, especially where diplococci or bacilli are present. It is advisable, of course, to have all organisms identified, but practically that has not been possible. I am hoping the bacteriologists will tell us why this is so. I am convinced that in many cases unimproved by vaccines the real etiologic organism was crowded out during cultivation by the more rapid and luxuriant growth of other organisms present.

Case 1 illustrates the necessity for proper surgical drainage of the sinuses involved before administering vaccines, and also illustrates my contention that unless all organisms found are cultivated separately the slower growth of some will be inhibited by the luxuriant growth of other organisms. In this case the first vaccine was a culture of staphylococci, while the second contained some diplococci. Several cases showed absence of organisms when cultures were made from the sinus secretion obtained during the final stages of the infection.

A valuable contribution to this subject is Levy's report in the "Annals of Otology," etc., for March, 1909. The report includes the results of investigators in Colorado obtained by means of a circular letter. There were fifteen accessory sinus cases reported, all of which were chronic cases which had been faithfully treated, and of these, six were cured, six improved and three not improved.

The chief clinical points to be noted are that the subacute infections are most favorably influenced by the vaccines, *i. e.*, cases which have existed for not longer than a year. The acute cases seldom need vaccines and the chronic cases show only slight benefit. In chronic cases the infected cells seem to be walled off as it were, and do not produce a general toxemia. This exclusion from the general circulation doubtless reduces the reparative processes in the cells and prevents stimulation by means of vaccines.

CASE 1.—Miss L., aged 35 years. Examined Aug. 30, 1907. Had offensive discharge from right nostril for two years accompanied by temporo-occipital headache; nose tender to touch from outside. Secretion was seen coming from the right middle meatus into the choana. The bulla ethmoidalis was infected together with the frontal sinus and the antrum. After resection of the anterior third of the middle turbinate body and removal of the nasal wall of the bulla there was much relief and copious drainage. Irrigation of the sinuses rapidly ended the infection in all but the antrum, which became very active following an acute rhinitis. Irrigation of the antrum for about seven weeks from one to three times weekly produced no permanent cessation of secretion and several acute attacks or relapses occurred, once involving the frontal sinus. An auto-vaccine

showing staphylococcus albus and aureus was given in five hundred million doses every seventh or eighth day for five weeks without result. The wall of the inferior meatus was then removed and proper drainage established after which vaccine was again administered with complete cure in two months. The second auto-vaccine contained a few diplococci.

CASE 2.—Mrs. K. W. M., aged 49 years. Examined Sept. 9, 1908. Gave history of head pains for three years, indefinite as to location, but described as a skull pain. Occasional "colds" but no nasal discharge and normal sense of smell. No local tenderness about accessory sinuses. Septal perforation anteriorly. Some polypoid degeneration at tip of the left middle turbinal, and turbinal swollen and boggy. After shrinking the left middle turbinal and applying the suction pump, pus was withdrawn from the corresponding meatus in large quantity. The anterior one-third of the middle turbinal was resected and the frontal sinus probed and irrigated and trikresol solution 1-200 forced into the sinus. This treatment relieved the headache almost entirely and was continued about one month without controlling the secretion.

Oct. 12, 1909, 0.5 c.c. of an auto-vaccine showing staphylococcus albus was injected. The ethmoidal bulla was opened with negative findings. Two acute stages or relapses interfered materially with the progress of the case as the patient was not able to afford proper surroundings and worked very hard and suffered considerable exposure. The discharge gradually lessened and Jan. 26, 1910, while under treatment again for the second relapse no bacteria were found in the secretion washed from the sinus. There was rapid lessening of the discharge from the time the vaccine was used. The vaccine dosage was increased gradually to 1.5 c.c.

CASE 3.—Mrs. G. S., aged 26 years. Seen Nov. 13, 1907, with history of severe "colds" of two months' duration, with thick yellow nasal discharge dropping chiefly into throat. Suction showed a long thick string of muco-pus coming down into right choana. The nose was very narrow and it was necessary to remove the entire middle turbinate body on the right side. The pus draining from the posterior ethmoids and the sphenoidal sinus was so virulent following the operation that a pharyngitis and tonsillitis resulted. The discharge slowly lessened but a relapse or fresh attack occurred Jan. 1, 1908, with severe temporal headache relieved by flow of pus following shrinking of the tissues with cocain and suprarenalin. Jan. 18, 1909, removed walls of posterior ethmoidal cells near sphenoidal orifice and irrigated the sphenoid which contained pus. One week later removed the anterior sphenoidal wall about the ostium together with the adjoining ethmoid cells, followed by drainage of bloody yellow and occasionally thick greenish pus. Three weeks later as secretion continued in spite of surgical drainage vaccine was administered in dose of five hundred million per c.c., the organism being staphylococcus aureus. Some depression was experienced during the remainder of the day but felt unusually well the next two days. There was no headache and the secretion was thinner and less in amount. Eight days later a second injection of 1 c.c. was given and the discharge which had resisted all treatment for three months and which had endured for five months altogether ceased almost suddenly after the second injection, showing only a slight trace when examined two weeks after first injection and two weeks later cultures and smears showed no pus cells or bacteria.

CASE 4.—Miss A. K., aged 22 years. Examined Feb. 24, 1908. Gave history of having had severe nasal discharge with thick crusts and post-nasal dropping as long as she could remember. No headache but had at one time an abscess of left ear. Examination showed large green-yellow crusts on septum and covering extensively atrophied turbinals in the left naris. Suction brought forth thick dark stringy secretion into the left middle meatus. There was a spur on the right side of the septum and the atrophy was confined chiefly to the inferior turbinal. Cleansing treatment for two days and another suction examination showed pus only in the left naris.

Feb. 29, 1908, 1 c.c. of an auto-vaccine showing staphylococcus albus was injected. Four days later some improvement was noted, especially in the subsidence of a

cough which had been very persistent, and most of the secretion was blown from the nose instead of draining backward into the throat. This improvement, however, may as well be credited to the cleansing treatment as to the vaccine, although the rapid relief of the cough was unusual, unless we credit it to the vaccine. Improvement continued for six weeks when the patient failed to return. Operation for drainage of the sinuses was refused in this case.

CASE 5.—Mrs. M. P., aged 52 years. Eyes examined Jan. 17, 1906, on account of a conjunctivitis and difficulty in opening eyelids. The nose showed polypi protruding from the middle meati and bathed in thin yellowish white secretion. These were removed and the anterior ethmoid cells thoroughly cut away. Pus was found on irrigation in the right frontal and maxillary cells. As local treatment proved insufficient the antrum was opened by removal of a large portion of the nasal wall and the antrum rapidly ceased to secrete. The frontal sinus, however, in spite of a very patent duct, continued to secrete. The treatment of the right naris began Sept. 25, 1906, and had been continued at intervals until April 6, 1908, when a vaccine showing staphylococcus aureus and albus was administered and continued twice weekly for two months, when in spite of treatment an acute sinuitis developed and with it a bronchitis and laryngitis, with reinfection of all the cells involved, together with the ethmoids of the other side of the nose. She is now trying a more favorable climate.

CASE 6.—Mrs. H. D. R., had been under treatment for six months for an iritis of the left eye when she came to consult my associate, Dr. Frank Aliport, who referred her to me for a nasal examination. The nasal infection was found in the corresponding anterior ethmoid cells which were removed, together with half of the middle turbinal, Feb. 26, 1908. No secretion was found in the antrum or frontal sinus. Four weeks later, as the discharge remained about the same in quantity and character in spite of suction drainage, a vaccine was made showing staphylococcus albus and given twice weekly. One week later the secretion was very much less and patient was much improved generally, and the eye showed great improvement. However, at this time she disappeared and further observations were impossible.

CASE 7.—Miss M. P., aged 15 years, came June 9, 1908. Gave history of frontal headache for two years, difficult nasal breathing and copious, thick, yellow and green nasal discharge; pansinuitis with polypi. In the right naris the polypi were removed, the anterior third of the middle turbinate resected, and part of the nasal wall of the antrum was removed. In the left naris the anterior ethmoidal cells were curetted, the polypi removed and part of the nasal wall of the antrum removed. Drainage was maintained by means of the suction pump, irrigation of the sinuses, cautery to the granulation tissue about the operative openings, etc. The discharge lessened gradually. Oct. 23, 1908, 0.25 c.c. of an auto-vaccine of 500,000,000 per c.c. was injected. A second injection was given five days later, at which time no secretion was seen in the nose or sinuses. The vaccine was continued. Nov. 17, 1908, patient acquired an acute rhinitis which lighted up the old condition for a time, necessitating secondary operations on each nasal antrum wall. Went to California and on May 18, 1909, when reexamined, showed some thin yellow green secretion in the antra and tenderness about the frontal sinuses. She had suffered frequently from frontal headaches during the California trip, but refused to consider an external operation, preferring to use the water power suction pump indefinitely.

CASE 9.—Miss P. H., aged 16 years, came Oct. 26, 1908, with a history of "catarrh" with excessive nasal discharge of bad odor for one year. Practically every accessory sinus of both sides except the right antrum was discharging pus which had produced extensive atrophy and crust formation. The fronto-nasal ducts were exposed by removal of the middle turbinal tips and the anterior ethmoid cells curetted and suction and irrigation of the various cells continued to aid drainage. Nov. 20, 1908, 0.5 c.c. of an auto-vaccine containing 500,000,000 staphylococci was injected, causing a local swelling. The vaccine was increased every seventh day until 1.5 c.c. were given. This amount the patient said caused a fever and queer sensations in her head beginning 6 to 8 hours after the injec-

tion. The arm remained somewhat sore and swollen for two days. Patient went to Colorado to school and had vaccine continued for six weeks with suction. Aug. 6, 1909, reported for reexamination and was found to be much improved. The turbinals were larger and the crusts few and small. A second course of vaccine was given which also produced local swelling of the arm.

CASE 10.—Miss E. S., aged 27 years. Gave a history of "catarrh" and ear gatherings during childhood. Two years ago began to have severe "colds." A particularly severe attack began one year ago, with copious yellow discharge with pronounced odor. Treatment by her physician at that time consisted in cauterizing the turbinals. When seen first on Oct. 25, 1909, it was found that the left frontal sinus and anterior ethmoidal cells were infected. There was tenderness to pressure on the frontal floor and at the inner orbital angle. Puncture and irrigation of the left antrum of Highmore revealed much yellow pus with marked odor. At the next visit, Nov. 5, 1909, the anterior half of the left middle turbinal was resected and the walls of the bulla ethmoidalis cut away. The constant left frontal headache was relieved by suction and irrigation of the bulla. Irrigation of the antrum and frontal sinus was continued daily, following which suction showed very little secretion from the ethmoids. The sinus secretion was considerably less after ten days of daily irrigations, but as the patient lived in a neighboring state removal of the nasal wall of the antrum was advised. A vaccine specimen was taken Nov. 20, 1909, and the first dose was given Nov. 26, 1909, and consisted of three hundred million of a mixed culture of staphylococcus albus and a few Gram-negative bacilli. The following day there was no appreciable antrum secretion and less than usual in the frontal sinus. The arm where the vaccine was injected was tender and there was slight general depression. Four days later a dose of 600,000,000 was given which was followed by increased local tenderness and swelling at the site of the injection and the depression was greater than before. The vaccine was given every fourth day until Dec. 15, 1909, nineteen days after the first injection, when no more secretion was found. The patient was discharged and her family physician advised to administer the vaccine once weekly for four injections. This case is, of course, not conclusively in favor of the vaccine, as we have all seen similar cases clear up under irrigation alone, yet we must admit that the rapid healing of a case with a history of a chronic discharge was at least very unusual.

DISCUSSION.

Dr. Mary Lincoln:—In all cases of infection in which the auto-vaccines are to be used, cultures should be made on blood serum or blood agar, in order to imitate as far as possible conditions present in the mucous membranes from which the material is taken. Sub-cultures are made in 24 and 48 hours, and from these a careful and thorough study of the organisms present can be made. It must be remembered that some organisms grow readily on artificial media, and may not be very virulent, while others which grow but poorly may be extremely virulent. That is possibly one reason why laboratory reports are sometimes unreliable. The organisms that grow most readily are reported, while the others escape notice. Studying a smear at the same time that a culture is made will give the most valuable information. It will show all the organisms present, and this study, combined with the study of the culture, will often tell us which organism is causing the infection. It is also important to know the normal flora of the mucous membranes, so that the flora of infections can better be studied. We have much to learn as to the normal flora and still more as to the organisms present in infections. Certain clinical pictures are produced by certain groups of organisms. One of the great difficulties is that the cultures studied in laboratories must be studied under artificial conditions, and it is sometimes impossible to correlate these studies with the studies made of smears.

Having made a study of the flora that causes the infection in the case in point, the next step is to make a vaccine either of the mixture of the organisms or of pure cultures of each organism. We are working in the dark when we attempt to give vaccines made from mixed cultures. If we use a mixed culture in preparing our vaccine we have billions of organisms that grow very readily on artificial

media, and few or none of the organisms that grow poorly and yet may be the true causative agents.

The dosage is another point that cannot be determined with any degree of accuracy in a mixed vaccine. For instance, we may give from one to two thousand million staphylococci at a dose, while it is very unwise and dangerous to give more than a few million of bacilli that are found in mucous membranes. If we use a mixed vaccine we cannot give enough staphylococci to be of any value, because we may be giving at the same time a dangerous dose of the bacilli.

A case of gingivitis had been treated by a dental surgeon with a stock vaccine without any result; in fact, the patient was getting worse. We examined the gums bacteriologically and found a very large number of small Gram-negative bacilli, a few staphylococci, and a very few Gram-positive bacilli, both large and small, but the preponderating organism was the small Gram-negative bacillus. The culture showed a luxuriant growth of staphylococcus. By careful watching we obtained finally a culture of the Gram-negative bacillus, from which we made a vaccine. The patient rapidly improved under the therapeutic use of this vaccine. Had we used a mixed vaccine our dose would have consisted largely of the staphylococcus which was not the predominating bacterium in the infection.

Dr. Joseph C. Beck:—I began my experiments about three years ago and then reported fourteen cases of ear, nose and throat infections of a chronic type, in which I used auto-vaccines of a different form of infection. Since then I have made subsequent reports, including about sixty cases in all. I am not now as enthusiastic as I was in the beginning, nor are my results as good, but I am encouraged by the therapeutic value of this measure, as an aid in the treatment of suppurative diseases of the nose and accessory sinuses.

The flora of the nose has been referred to. That is the one point of importance. The cultures we get are practically all staphylococci, but there are other organisms which possibly play a rôle in chronic infections, and if vaccines are not obtained from them, the results in many instances will remain negative. This has been brought forcibly to my attention in the cases of two physicians who had chronic infection of the nose. I had recommended auto-vaccines. Both made the vaccines by using the secretions as they come from the nose. Both men have studied Wright's work thoroughly, and they sterilized the vestibule of the nose, blew out the secretions, sterilized them, and without dosage or opsonic index injected the sterilized secretion. Great improvement followed in both cases, without any other treatment whatsoever. Both men suffered a great deal from local reaction at the site of injection.

Dr. Brawley reports cures. I would like to ask him how long it is since these cases have taken place? I have had cures because I paid attention to the local condition. The general condition is markedly influenced. The patient gains in body weight from the use of the vaccines. Stock vaccines are useful, especially those of the polyvalent type. They are made from thirteen different cultures and the mixture of aureus, albus and citreus gives the best results.

Dr. A. M. Corwin:—I want to congratulate Dr. Brawley on his enthusiasm in entering this new field—a field in which demonstration has been open to serious doubt. The fraternizing of laboratory and clinical practice is to be encouraged. However, I did not get the impression from the paper that Dr. Beck seems to have gotten, that Dr. Brawley claims a large number of cures as the result of vaccine therapy. He reports a number of improvements, but these occurred in cases in which the usual operative treatment looking toward better drainage and ventilation, and thorough irrigation had been given, and we all realize that even in chronic cases such improvement is to be expected. Then, too, many of his patients disappeared from view before definite results were obtained. It would seem as though, if vaccination will prove anything, it is to be applied in cases in which no other form of treatment is used, so that results can be noted with precision. Then, there are patients in whom, after ordinary operation, the chronicity of the symptoms continues. When can vaccine therapy do for these? It is only by having a large number of carefully tabulated cases that any conclusions can be drawn, and the negative reports in such cases are of as much value as are the positive ones.

We are too apt to follow up a thing that is seemingly curative, and report good results, and when we find a series of failures we are loath to publish them. The value of Dr. Brawley's paper will come five or ten years hence, if he continues to push his investigation; then more conclusive data can be presented. The paper is of little advantage except to stimulate our interest and focus our attention upon this newer field of investigation.

Dr. C. M. Robertson:—Dr. Corwin's remarks are discouraging, because, if all cases are followed to the very end, we must have 100 per cent. of failures, as all these patients will die some time. If a cure persists for one year, that is sufficient. Most of Dr. Brawley's cases occurred in 1907, and he knows as well as anybody when a cure has been effected.

Nothing was said about any vaccines except the auto-vaccines, and nothing was said of auto-vaccines being used that were not produced on the infected premises. All Dr. Brawley's cases except one were chronic cases, and even the exception was a case of five months' duration. Some cases had persisted from childhood. Most of them for six months or more. In all his cases he used the staphylococcus auto-vaccine.

To answer Dr. Corwin, I have had one case, a woman, who had a pansinuitis, and although she had an enlarged bulla that pressed the middle turbinal against the septum, and had hypertrophy of the middle turbinal that blocked the hiatus, I used the auto-vaccines to see what would happen. I started with 5,000,000 and doubled the dose every day when there was no negative reaction. If the temperature rose, I waited until the following day. I kept this up for ten or twelve injections, at which time the discharge had stopped. Then I waited for a month or two, had the patient report, and again after a year. There was no return of the discharge. In this case an operation was indicated to the extent of trimming the anterior end of the middle turbinate and opening the bulla and all sinuses that were involved.

I have had other cases in which I tried the auto-vaccines, and the point made by Dr. Lincoln was substantiated, that the germ causing the disturbance is the hardest to cultivate. I have never tried the smear examination, although I believe that that is where most of us have fallen down.

Some time ago Dr. Gehrmann told me that he could make an auto-vaccine from any germ injected and get results. I have had some experience in that direction. I have had cases where there was no appreciable change in the discharge, and in one or two the application of a strong solution of argyrol stopped the discharge. Trimming the turbinate and opening the tracts has produced results where auto-vaccines fail.

I have also tried the bacillus bulgaricus and obtained results when every other organism failed, so that it seems to me we are just on the threshold of learning something about this subject. We are getting reports from men who know, and after we get a few more data we will be able to see what cases can be relieved by this method of treatment, and those where the treatment is not indicated.

Dr. Henry Gradle:—Of fifteen instances of sinus and ear disease in which I have used the vaccines, some of the cases have not been followed sufficiently to state permanent results. A number have shown no benefit, evidently on account of insufficient drainage. Among them were several in whom a rise in the opsonic index was measured by Dr. Lincoln, and yet the clinical condition was not influenced. The healing tendency started by vaccination is not sufficient to lead to results when there is an interference with the free escape of the pus. The most positive instances I have seen are the following: A girl having had for a long time a purulent discharge of chronic ethmoiditis got an acute mastoiditis requiring operation. On account of exposure of the sinus and a doubt whether the diploetic cells had been cleared sufficiently, I gave her four injections of staphylococcus which had been found in the mastoid discharge in intervals of a week. There was prompt healing of the mastoid wound and at the same time the ethmoid discharge containing also staphylococci ceased permanently after having resisted previous conservative treatment.

The second fairly demonstrative instance was a one-sided maxillary empyema dating back nearly a year, but causing no local symptoms except discharge. The patient came on account of a fresh retino-chorioiditis on the same side. Since no other cause could be learned, it seemed reasonable to consider the eye disease secondary to that of the antrum. (I have published last year four observations of this character in which this relationship was quite conclusively shown in two.) An attempt to perforate the nasal wall of the antrum was abandoned at the patient's request, when the bone was found unusually thick. A few staphylococcus injections were given on finding this germ, whereupon the nasal suppurations disappeared gradually. The retina-chorioiditis healed likewise. But from the clinical course one could not say positively that the cure of the eye disease had been brought about by the vaccination.

In a case of subacute frontal sinuitis staphylococcus injections, combined with the usual nasal treatment, had apparently no effect until I removed the front end of the middle turbinal. Notwithstanding considerable relief from the pain after the operation, the discharge changed but very little until I resumed the vaccine treatment, when it finally ceased. In an instance of multiple sinuitis I had exposed the antrum by almost complete removal of its nasal wall and could hence look into it. The staphylococcus and the pyocyaneus were found and the vaccine treatment with both germs was thoroughly tested under the guidance of the opsonic measurements made by Dr. Lincoln. But it proved of no influence whatsoever, although in this instance the antrum at least had absolute drainage.

A physician had a persistent suppuration through a small perforation in Shrapnell's membrane. There was no odor and a very trifling seropurulent discharge which did not yield to the usual treatment (gauze-drainage and boric acid). Staphylococci were found present. He had an autogenous vaccine made and three injections cured the discharge. Yet I have had several cases of similar character in which negative results were obtained.

We must always assure ourselves that in every case drainage is not interfered with and that there is no mechanical impediment which dams back the discharge before we can expect to get any results from autovaccination. Moreover, we are not at all sure as yet that the principle of autoinoculation with the germ causing the disorder is appropriate in all cases of infection. It has been shown to be true of the staphylococcus and some other germs, but whether it applies in the case of all germs is a question still to be solved.

Dr. A. H. Andrews:—My impression is that so long as we employ this or any other plan of treatment indiscriminately, we will have a large percentage of failures. After all, the most important thing is the pathology present, and the treatment to be efficient must be adapted to the pathology. I am inclined to think the usual method of syringing these cavities is not as good as some other plan of treatment, especially when there is no definite obstruction to drainage or any necrosis of the bone. My own experience in these cases is that they have gotten along far better when the pus has been blown out of the cavity with compressed air, followed by some mild medication, than when I used the syringe.

DISCUSSION.

Dr. J. Holinger:—The bacteriologist spoke about the difficulty of finding in some cases the micro-organism which causes certain forms of suppuration in the nose. Did he ever find absolutely sterile secretions? The question as well as the answer it found is interesting.

Patient A has an old suppuration of the nose which necessitated several operations on the turbinals as well as on the sinuses, and the passing of several winters in California. Whenever A visited B, B acquired an acute coryza with local and pronounced general symptoms. In the course of a year four distinct attacks of this kind were observed. The secretions of the nose of A were examined once, and those of B twice, and smears as well as cultures in all the three examinations were found absolutely sterile. We have, therefore, the paradox of a suppuration of the nose which is very infectious, but has sterile secretions. Here is the solution: B noticed on certain mornings a thick clot of secretions in the nasopharynx which were rusty throughout and sometimes had fine streaks

of blood. On examination pure cultures of pneumococci in great numbers were found, and B as well as A were pronounced pneumococci carriers by the bacteriologist.

Dr. Brawley (closing):—I simply intended to present a preliminary report of the results I have had in a few cases. They were early cases and my observations were not as accurate then as they are now. One case in which I operated on the sphenoid and ethmoid cells I have seen occasionally, and the patient tells me she has not had an attack of cold since the vaccine treatment, though that autumn and winter colds had been a frequent occurrence with her previously.

I have the histories of about thirty cases which have not been watched long enough to report on at this time. One thing I have noticed is the results obtained in what I call the subacute cases—cases that have run a few months or less than a year. There seems to be something about the chronic cases that walls the sinuses off, as it were, from the general circulation. I have never seen the pathology which would explain this, but I have seen the clinical manifestation often. I know that various kinds of vaccines have been used and results have been obtained that could not be explained entirely by the sort of organism used. I take it that many of these cases have been helped by the stimulation of the ductless glands which was given by the toxins. These vaccines are carefully heated to 60 C., in order not to destroy the toxins which have the property of acting on the ductless glands entirely independently of the production of auto-vaccine within the blood serum. I have seen that clinically for years in the improvement of the general health which follows such infectious diseases as typhoid. That, I think, will likely explain a number of cases where we have gotten good results, even when the organisms employed were not the proper ones.

PHYSIOLOGIC VESTIBULAR NYSTAGMUS.

J. R. Fletcher, M.D.

(Abstract.)

Nystagmus (eye movements alone meant) may be divided into two types—vestibular and ocular. It is necessary to distinguish sharply between them in order to avoid error. The characteristics of each are as follows:

VESTIBULAR.	OCULAR.
Rhythmic movements, of equal excursion but of unequal velocity.	Undulating eye movements of equal excursion and velocity.
Has two components, quick in one direction, slow in the other.	No quick component.
Increases when gaze is directed to side of quick component; decreased or stopped when directed to side of slow component.	Not increased by gazing to either side, but ceases with fixation of vision in any direction.
Does not cease when eyes are closed.	Ceases when eyes are closed.
It is either horizontal, rotary, vertical or compound.	Never compound or rotary.

The vestibular apparatus is the chief organ of equilibrium. Each canal produces nystagmus in its own plane. The end organ of the vestibular nerve functionates when the endolymph contained in a membranous canal flows against its cupula. Motion of the cupula causes tension of the hairlike epithelial prolongations of the cells of the crista ampullaris. This tension causes a sensation which is transmitted through the vestibular nerve to Deiter's nucleus and is there interpreted and notice sent to the auxiliaries of the equilibrium that the vestibular apparatus is functionating. These auxiliaries are sight and the muscular sense.

The direction is designated by the quick component, as this is the most obvious. In reality the slow is the vestibular component. The quick comes from the gyrus angularis, and is a movement of recover or counter motion.

Nystagmus by Turning (Dreh Nystagmus) has three stages: Primary, during turning; after-nystagmus, immediately after turning ceases; ultimate nystagmus which sometimes follows after-nystagmus. Nystagmus during turning is in the direction of turning; after-nystagmus is in the opposite direction of turning

except when the head is inclined 90 degrees backward. When ultimate nystagmus occurs it is in the same direction as the primary, but is very slight and of short duration.

The plane of the nystagmus depends upon the position of the head during turning. Flourens showed that the horizontal is the typical functionating plane, therefore the canal or pair of canals which we wish to excite by turning must first be brought approximately into the horizontal plane. For example, when the head is placed forward at an angle of 90 degrees to the vertical, the anterior vertical canals are about in the horizontal plane. Turning in this position will produce a pure rotary nystagmus. At 45 degrees forward the result will be a compound nystagmus, horizontal and rotary, etc.

Caloric Nystagmus is produced by application of heat or cold to the tympanic cavity. Heat produces nystagmus to the heated side; cold to the opposite side. The plane of the nystagmus from heat is rotary, from cold compound, horizontal or rotary. When temperature equal to that of the body is applied, there is no reaction. When higher or lower temperature than that of the body is applied to both sides at the same time, nystagmus occurs to either side by looking in the extreme lateral direction. It ceases immediately upon fixation of vision straight ahead. Accompanying symptoms, vertigo, nausea and vomiting are quite frequent in rotary nystagmus.

Seeming movements of near-by objects, or of the body of the nystagmatic person are not uncommon in all kinds of nystagmus.

Galvanic Nystagmus: Cathelectrotonus produces nystagmus to its own side. It equals heat in caloric nystagmus. Anelectrotonus produces nystagmus to the opposite side and is equal to cold in caloric; 2 to 4 ma. are required when both electrodes are placed on the head; 20 to 24 ma. when one is by the ear and the other in hand of the same side.

Vestibular Ataxia: Reactionary body movement is always in the opposite direction to the quick component. The plane of falling must be considered with relation to the earth. Manifestly one cannot fall in the horizontal plane; therefore, horizontal nystagmus produces no reaction. If, however, rotary nystagmus is made horizontal (with relation to the earth), by bending the head 90 degrees forward reactionary body movement will take place in the plane of the nystagmus (with relation to the head), viz., rotation. The ataxia bears no relation to the intensity of artificially produced nystagmus.

A Theory of Synchronism: It is impossible for me to conceive one canal functionating while its fellow of the opposite side is at rest, because in nystagmus by turning both cupulæ are moved by the flow of endolymph at the same time and in opposite directions. There must, therefore, be a direction of greatest and one of least physiologic activity. That canal governs in which the movement is in the direction of greatest physiologic activity. There is a position of rest when neither is functionating. I accept turning and the caloric test as a better index to the direction of greatest and least physiologic activity than the experiments of Ewald and Hogyes, as the latter involve trauma and violence. Cold produces compound nystagmus to the cooled side, which is stronger than that by heat. It is, therefore, plus. The cupula in the anterior vertical canal moves toward the utriculus; in the horizontal, away from it. These directions must, therefore, be the greatest physiologically. In turning to the right the endolymph moves from the utriculus into the open mouth of the left ampulla and downward in the horizontal canal. The impact here, during turning, is consequently greater than in the right, as the endolymph must flow upward through the ampulla to the utriculus. During turning the left dominates; after turning the flow is reversed and the right dominates. It is more than probable that the same principles govern the posterior vertical pair, modified only by the anatomic positions of the canals and their cristæ.

Dr. George E. Shambaugh takes exception to Dr. Fletcher's so-called "theory of synchronism" that the semicircular canals never act separately, but always in pairs, and that the direction of the nystagmus resulting from overstimulation is always determined by that canal of the pair in which the flow of the endolymph

is such as to produce the greatest physiologic response. The fundamental facts in the physiology of the semicircular canals underlying this question are: First, that the flow of the endolymph always results in a greater stimulation when moving in one direction in a canal than when moving in the other; second, that the direction of greatest response is not the same in all the canals. In the horizontal canals the greatest response is elicited when the endolymph moves from the ampulla toward the small end, whereas in both the superior and posterior canals the greatest response is obtained when the endolymph flows from the small end toward the ampulla; third, that the ocular manifestation resulting from the motion of endolymph in any canal is a slow movement of the eyes in the plane of the canal and in the same direction as the motion of the endolymph, and a quick movement of the eyes in the opposite direction.

Why it is that the greatest stimulation of the horizontal canal results when the endolymph flows from the ampulla toward the small end, and of the superior and posterior canals when the flow is from the small end toward the ampulla, we do not know. Dr. Fletcher has suggested two explanations. In one place he states that the force of gravity is the determining factor, because in the superior canal the flow of the endolymph from above downward to the ampulla results in this canal in a greater stimulation than when the endolymph moves from the ampulla upward. As a matter of fact, it is not clear that gravity can play any part in the motion of endolymph in closed canals filled with this fluid. In another place he states that the flow of endolymph into the wide-open ampullar end results in a greater stimulation than a flow in the opposite direction. This explanation could apply only to the horizontal canals, for in both the posterior and superior canals the greater response is produced when the endolymph flows from the smaller end toward the ampulla.

If one keeps in mind the fact that the direction of nystagmus is determined by the direction of the flow of endolymph in this or that canal, irrespective of whether the particular canal is stimulated in the direction of its greatest physiologic activity or not, a theory of synchronism, as Dr. Fletcher proposes, is in no way necessary to explain the phenomena of nystagmus. Suppose a person in the upright position is turned to the right, causing a flow of endolymph in the horizontal canals, the direction of the nystagmus during turning will be toward the right, because in both of the horizontal canals the direction of the flow of endolymph will be such as to cause nystagmus to the right. For example, in the right horizontal canal, when turned to the right, there will be a flow of the endolymph from the small end of the canal toward the ampulla, the direction of least physiologic activity. Such a response will produce nystagmus to the right. At the same time, in turning to the right, the flow of endolymph in the left horizontal canal will be from the ampulla toward the small end, the direction of greatest physiologic activity for this canal. This direction of the flow of endolymph in the left horizontal canal will also produce nystagmus to the right. To assume that it is the left canal alone that determines the direction of the nystagmus, simply because it happens to be this canal that is stimulated in the direction of its greatest physiologic activity is unnecessary. The direction of the nystagmus in turning is determined by both of the canals pulling in the same direction. The error in his argument is made still more apparent in cases where the left labyrinth is destroyed. Here the nystagmus on turning the patient to the right is still directed to the right, determined, of course, by the stimulation of the right horizontal canal, although this canal is now stimulated in the direction of its least physiologic activity. An equally serious error is where he attempts to apply his theory of synchronism in explaining the nystagmus resulting from the stimulation of the labyrinth with hot or cold water. He asserts, for example, that in syringing the right ear with warm water the nystagmus is towards the right, not, however, because of the flow of the endolymph in the right superior canal, since in this canal the flow would be from the ampulla towards the small end, that is in the direction of least physiologic activity for this canal.[5] He asserts that the direction of the nystagmus to the right, in this case is determined from the opposite (left) ear, where he assumes that a flow of the endolymph also

takes place, but in such a direction as to result in producing the greatest physiologic response, that is, from the small end to the ampulla. Here, in order to make results conform with this theory, that the direction of the nystagmus is determined by a canal which is stimulated in the direction of its greatest physiologic activity, Dr. Fletcher is forced to assume that when hot water is syringed into the right ear stimulating the superior canal on this side in the direction of its least physiologic activity, it produces at the same time in some mysterious way a motion in the endolymph in the left superior canal in an opposite direction, so that this canal will be stimulated in the direction of its greatest activity, thus allowing it to determine the direction of the nystagmus. The impossibility of such a claim is apparent without the demonstration that when the left labyrinth is destroyed and the right ear syringed with hot water the direction of the nystagmus is still to the right, although here this direction must be determined by the right canal alone, which is being stimulated in the direction of its least physiologic activity.

In his discussion of the pairing of the canals of opposite labyrinths the inference is that the superior on one side is paired with the superior of the other: as a matter of fact, it is only the two horizontal canals that seem to be paired in this way, since anatomically the superior canal on the one side lies in a plane parallel with the posterior canal of the opposite side.

Dr. Norval H. Pierce:—The question regarding the current of the endolymph being the agency by which the crista is stimulated is a very ancient one. There can be no flow of endolymph in such a non-compressible fluid without some space to take up the flow. It is a physical impossibility for flow to occur. That the semicircular canal may react without such a flow being possible is proved in cases where both crura of a semicircular canal is entirely cut through during operations. All the phenomena of static disturbance occur immediately after such an accident. If infection does not intervene, the semicircular canal heals with its caliber obliterated at the two points of severance. And yet in a number of these cases in which the semicircular canals have been cut normal function has been reestablished in them. Physicists hold that this stimulation was determined by molecular movements and not by mass movements of the endolymph. After reading over von Stein's book on the internal ear, one would believe it impossible to advance anything of a hypothetical nature that would be new in explaining the actions of the semicircular canals. However, the matter is not closed. The majority of physiologists to-day believe that there is interreaction between all the semicircular canals all the time, and if we go over the relationships which exist between the various movements of the crista, we will see that they are wonderfully planned, in order that vertigo shall not occur in any of the movements of ordinary life. If, for instance, the highest physiologic activity was possessed by the hairs of the superior semicircular canals, when they are directed toward the utriculus, we would be dizzy whenever we shake the head. The highest physiologic activity occurs when the hair cells of the superior canals are directed upward and downward in the horizontal canals. This interrelation must of necessity be so because otherwise we would be dizzied most of the time. Without accepting the hypothesis that space is absolute, I advocate the belief that the crista react to rotation, or angular acceleration, just as the retina reacts to light. Not only are they physiologically active when the body is turned in any particular direction, but they are always in a state of tonicity. This explains why, if cold water is syringed into the right ear, we get nystagmus toward the left, because the hairs in the right static apparatus are directed toward the direction of least physiological activity, and the hairs on the other side are in a relatively higher state of activity. We thus see that not only the semicircular canals on the same side react one on the others, but that those on one side are corelated to those on the opposite side. This functional corelationship is accomplished by the means of the centers in the cerebellum and pons. This is the modern view of the physiology of the semicircular canal system, and is of the greatest value in our clinical work.

Dr. A. H. Andrews:—I would like to take exception to one statement which Dr. Fletcher makes, namely, that in the caloric test it is the motion of the endo-

lymph in the horizontal canal combined with the motion in the superior canal which produces the rotary nystagmus. It is true that if the zygomatic arch is taken for the horizontal line, the back part of the horizontal canal dips a little, but if Reid's base line is taken for the horizontal line the posterior canal does not dip any at the back. Whether the patient inclines his head forward or backward or holds it so that the canal is horizontal, we get the rotary nystagmus just the same. I believe the man who knows the most about this subject has a good deal yet to learn, and that the rest of us know comparatively little about it. We have a long way yet to travel before we will thoroughly understand the subject under discussion, but the progress which is being made is in the right direction.

Dr. Fletcher (closing discussion):—As to the misunderstanding which exists between Dr. Ballenger and myself, it is easily explained. Dr. Ballenger speaks of the stimulation of a particular side of a crista, while I spoke of the crista of one or the other side of the head, referring to the synchronous action existing between the pair, right and left.

I do not agree with Dr. Shambaugh that Ewald's experiments are conclusive. He showed, however, that it is the flow of endolymph which moves the cupula and causes the nystagmus. Hoyges produced endolymph movement and displacement of the cupula by introducing a hypodermic needle into the cavity of the utriculus. If there is not a current in the membranous canal slight motion, at least, occurs momentarily. Gravity probably aids the flow. The greatest impact is against the crista on the side opposite to the direction of turning during turning, as the largest part of the endolymph is in the utriculus. When this body of fluid moves to the ampulla from the utriculus it must make more tension in the ampulla than elsewhere. After a moment the endolymph and fixed canals move at the same velocity. When the turning is stopped after, for example, turning to the right, the endolymph moves on in the direction of turning into the mouth of the right ampulla against the crista, causing the greatest impact there, displacing the cupula toward the canal.

The level of the indifferent and ampullary ends of the horizontal canals are not always in the same plane. Sometimes the indifferent ends are lower.

There are two directions of physiologic activity of the cristæ, but unequal. While the vestibular apparatus of both sides exist, they act together synchronously, the strength of action of one being stronger than the other.

When we syringe the right ear with cold water the result is the strongest vestibular action in this ear, the weakest in the other. Some reflex actuates the left, perhaps vasomotor change. When hot water is used the least physiologic activity is in the syringed ear.

JO DAVIESS COUNTY.

The Jo Daviess County Medical Society met in the Odd Fellows' Hall, Elizabeth, Ill., at 1 p. m., April 21, 1910, with a fair attendance.

Dr. Czibulka notified the society that he could not attend the state meeting whereupon Dr. Nadig was elected delegate with Dr. D. G. Smith as alternate.

A committee was named by the president to draw up and recommend to the society at the next regular meeting such changes and amendments to the constitution and by-laws as might be necessary.

The society instructed the president and secretary to send resolutions of approval and appreciation to Senator Owen for his earnest work towards the establishing of a department of public health and also asking our representatives to use their efforts to pass the bill for this purpose.

It was also decided that all members who had not paid their dues should be dropped from THE JOURNAL mailing list.

The Stockton Division invited the society to meet in their city in July and bring their ladies and sweethearts with them.

The scientific program was then taken up and Dr. Cottral reported two interesting cases, after which Dr. Milton H. Mack of Chicago delivered a very inter-

esting lecture on "Dilatation of the Stomach" and laid much stress on colonic flushing in these cases.

Dr. H. T. Walker of Dubuque read a paper on "Why Secondary Operations Should be Insisted Upon in Appendiceal Abscesses," with the report of several cases. The above subjects were discussed by nearly all members present and a great deal of good was obtained.

The society felt very grateful to Drs. Mack and Walker for the many valuable points given out.

The society then adjourned to the Commercial Hotel, where dinner was served.

D. G. SMITH, Secretary.

LAKE COUNTY.

The Lake County Medical Society met, April 11, 1910, at the Gables, Waukegan. In the absence of the president, Dr. L. H. Tombaugh took the chair and Dr. W. C. Bouton was appointed secretary pro tem on account of the absence of the secretary. It was moved and seconded that the president and secretary act on the drug act according to their discretion, representing the society. Carried. Moved, seconded and unanimously carried to elect Dr. J. C. Foley, Waukegan, as delegate to the State Medical Society meeting. Moved and seconded and carried to appoint Dr. John L. Taylor of Libertyville as alternate to the State Medical Society meeting. On investigation by taking the census of those present, it was found that of the ten present but two carried protection against mal-practice suits other than that provided by the state society. Moved and seconded to have the president appoint a member of the society to be on the medicolegal committee of the State Medical Society. Motion carried. Moved, seconded and carried that the chair appoint a committee of six to investigate conditions at the County Alms House. The chair appointed the following physicians: Drs. Elva Wright, W. C. Bouton, J. C. Foley, E. H. Ames, M. J. Kalowsky and L. H. Tombaugh. The resolutions of the Tazewell County Medical Society were read but no action was taken on the matter. On account of the late hour most of the program for the evening was postponed to a future meeting. However, a paper by Dr. Proxmire of Lake Forest was read and discussed, on the subject of "Vibrotherapeutics."

Those present were Drs. Tombaugh, Bouton, Foley, Gourley, Gavin, Kalowsky, Turner, Ames, Proxmire, Elva Wright and Roberts.

Adjourned.

W. C. BOUTON, Sec. Pro Tem.

MORGAN COUNTY.

A regular meeting was held at the Public Library, Jacksonville, March 10, 1910, at 8 p. m. Dr. Grace Dewey presided. Members present: Drs. Milligan, V. Dinsmore, Dewey, Ogram, Leonard, King, Gailey, Adams, Black, Cole, McLaughlin, Hardesty, Crouch, Pitner and Stacy. Dr. A. R. Gregory, late of the University of Michigan, and Miss Beatrice Foster, assistant medical librarian, were visitors. The names of Drs. A. R. Gregory and William H. Weirich were put up for membership and were given the censors for their investigation. Dr. Moyer's question as to how many carried malpractice insurance was put and only three of those present had such insurance.

Dr. Black reported a case of gangrene of the sigmoid and descending colon following herniotomy. Sixteen inches of colon and sigmoid were returned to the abdominal cavity in apparently good condition. A rather large free bowel movement seemed to indicate that everything was going well, but subsequently patient developed symptoms of obstruction and local peritonitis and died. Partial autopsy revealed the gangrenous condition.

Dr. Leonard reported a case of general paresis in which he had used muscular injections of bichlorid of mercury. Symptoms for a time were greatly improved, but subsequently the patient succumbed.

Dr. McLaughlin reported a case of peritoneal tuberculosis in which Moro's ointment test was positive as a diagnostic sign. He also reported a case of juvenile diabetes.

Dr. Charles E. Cole read a paper on measles. This would seem to be rather a trite and hackneyed subject, but locally, this winter it has proved both interesting and disastrous, fourteen deaths in December being due to the disease proper or its complications. He considered the disease in all its aspects, briefly but succintly. It is regretted that we do not know more about the etiology so that eradication measures should be taken.

Dr. King made a few remarks concerning this disease from the standpoint of municipal control. He was well pleased with the cooperation shown by the physicians in notification of measles cases given to his office during the past winter. On the other hand, the doctors who discussed the remarks, Dr. Cole and Dr. King, were also well pleased with the work of the City Health Physician in his efforts to control the measles epidemic.

The report of the committee on contagious diseases was received and adopted and is as follows: Your committee appointed at the last regular meeting, to investigate and make recommendations concerning the placarding and quarantine or isolation of contagious diseases, respectfully submit the following report, that the following diseases be placarded: all forms of measles, whooping cough, chicken pox and mumps.

Section 1.—Measles: That the period of isolation be three weeks from the invasion. That all children exposed be isolated for sixteen days. Whooping cough: That the period of isolation be six weeks from the invasion, or as long as spasmodic cough lasts, or cough and expectoration. Chicken pox: Isolation should continue until the crusts have dropped off. Mumps: Isolation should continue until ten days after swelling of glands disappears.

Section 2.—That all physicians report to the health warden for the purpose of keeping a record, all cases of tuberculosis and their place of residence. Also that all premises occupied by persons having tuberculosis be disinfected after removal.

[Signed.] A. L. Adams,
Josephine Milligen,
T. O. Hardesty.

In connection with this report, the committee presented data compiled from the leading authorities on the disease mentioned which formed a basis for their report. The report was freely discussed before its adoption. A motion was made, seconded and carried that the committee continue to work and that a copy of the report be made and circulated among the members for their signature to an agreement to report the diseases mentioned to the city health physician and that a signed copy of the report be placed in the hands of the city health physician, after which the society adjourned.

Regular Meeting, April 14, 1910.

The society met Thursday, April 14, 1910, 8 p. m., at the Dunlap House, Jacksonville, Dr. Grace Dewey presiding. Members present: Drs. Adams, Baker, Black, Bowe, Campbell, Cole, Crouch, Dewey, Duncan, Gregory, Hairgrove, Hardesty, Hinton, King, Milligan, McLaughlin, Norris, Pitner, Stacy, Stubblefield, Vertrees, Webster, Weirich and Woltman. Visitors: Drs. M. L. Harris, Chicago; L. J. Harvey, Griggsville; L. E. Orr and G. A. Lightle, Tallula; J. H. Spencer and W. A. Wesner, Murrayville; and W. W. Crane and L. H. Clampit, Jacksonville.

Dr. J. U. Day, Jacksonville, was nominated for membership. Drs. William H. Weirich and Abraham R. Gregory, Jacksonville, were elected members. The letter issued by the council relative to medical education and licensure in Illinois was read and considered question by question. The society lined up as a unit for progressiveness along the lines suggested by the council. Gifts to the library from Drs. C. E. Cole and P. E. Hofmann were reported. A change in the by-laws providing for election of a temporary delegate when necessary by members present at the state meeting was proposed.

Dr. M. L. Harris of Chicago was present at the invitation of the society and gave an interesting presentation of "Abnormal Mobility of the Liver," of which the following is a résumé: Forms of mobility: 1. General mobility associated

with other floating viscera as in Glenard's disease. 2. Constriction and increased mobility of a part or the whole of either the right or the left lobe. 3. Cross furrowing and lobe formation from constricting bands or from the effect of posture and work.

Diagnosis of the condition is often not made until operation is being executed for other conditions such as gall-stone disease and floating kidney. It is quite important to outline the area of liver dulness with the patient in several positions; sitting up, recumbent in left and right positions, fluctuation of dulness on change of position being characteristic as a rule. The exception is where the once movable liver has become tied up somewhere by adhesions. The transverse furrow formation does not necessarily follow tight band wearing or improper corset lacing but is often seen in little round women, being produced by bending and pressure. Symptoms vary from slight digestive disturbances to pain, fever and vomiting.

Treatment: The object of this is to limit the mobility of the organ. This is done by somewhat the same procedure as is used in anchoring a kidney. The ventral surface of the liver is freshened by scraping, catgut sutures that fit the needle tightly are passed straight through the liver and underneath it and hammock fashion are passed back through again, being then anchored as high up as possible in the anterior abdominal wall. The same procedure is practiced in all three forms of mobility. Dr. Harris cited quite a number of cases operated on with satisfactory results. The paper was much appreciated and freely discussed by a number of the physicians present, and a vote of thanks was given the Doctor for his presentation.

Under the head of new business the question of the desirability of the city's taking its water supply from some comparatively shallow wells near the Mauvaisterre Creek, north of the city, which takes away the city sewage, was brought up for consideration. The society went on record unanimously as of the opinion that the site for such a municipal supply was undesirable. The meeting was preceded by an informal dinner at the Dunlap House.

While here, Dr. Harris also spoke at a business men's luncheon on "The Desirability of a National Board of Health with Representation in the Cabinet."

Adjourned.

GEORGE STACY, Secretary.

ROCK ISLAND COUNTY.

The regular bi-monthly meeting of the Rock Island County Medical Society was held at the New Harper Hotel, Rock Island, April 12. After dining, the members retired to the hotel parlors and the business of the evening was taken up. The minutes of the February meeting were read and approved. This being the annual election meeting no scientific program was prepared. Messrs. H. O. Rolfs and M. W. Battles, Jr., a committee from the Rock Island County Druggists' Association were present to confer in regard to the second annual "Get Together" meeting of the physicians and druggists. The proposition was approved of and President Ludewig appointed Drs. F. H. First, F. H. Gardner, and J. J. Tremblay as a committee to meet with the druggists and arrange for the date and plans of the meeting. Experience having shown that the annual dues of $4.00 were insufficient to meet the expenses of the society, thereby always necessitating several special assessments, an amendment to the constitution to change the $7.00 per annum was brought up and was carried by the necessary two-thirds vote. Dr. E. M. Sala of the committee on the "Open Meeting" reported the completion of their work, and they were then discharged with thanks. The committee on the establishment of a County Society Medical Library reported that the Augustana College authorities were in favor of it being located in the new Denkmann Memorial Library building, and that they would provide the necessary room and other assistance. It was decided that the proprietorship of the books be vested in the Augustana College and in case of the disruption of the same at any time, that the ownership revert to the Rock Island County Medical Society. The report was

accepted and the committee was continued. It is planned to build up the library gradually with donations and bequests of medical books and journals. There is no doubt that in a few years the society will have an excellent library that will compare favorably with the best in the country. In the absence of the regularly elected delegate and alternate at the state meeting, it was decided that the members present be empowered to elect a representative from their number to represent our county. U. S. Senator R. L. Owens' bill, No. 6049, which provides for a Federal Department of Health, was endorsed and the secretary was ordered to communicate such to Senators Cullom and Lorimer and Representative J. McKinney, of the Fourteenth District.

The annual election of officers resulted as follows: President, Dr. H. S. Bennett, Moline; first vice-president, Dr. W. L. Eddy, Milan; second vice-president, Dr. J. E. Asay, Rock Island; secretary, Dr. Albert N. Mueller, Rock Island; treasurer, Dr. A. T. Leipold, Moline.

The retiring president, Dr. W. H. Ludewig, was elected 1910 delegate to the state meeting and Dr. J. R. Hollowbush the alternate. After giving the retiring officers a vote of thanks the meeting adjourned. Members present were: Drs. W. H. Ludewig, J. R. Hollowbush, G. L. Eyster, C. T. Foster, A. J. Miller, W. L. Eddy, E. M. Sala, A. T. Leipold, B. J. Lachner, J. J. Tremblay, H. J. Love, A. N. Mueller, J. T. Lamping, F. H. Gardner, J. C. Souders, J. E. Asay, L. Ostrom, S. B. Hall, F. H. First, C. A. Peterson, W. D. Chapman and W. D. Snively.

ALBERT N. MUELLER, Secretary.

TAZEWELL COUNTY.

At the meeting of the Tazewell County Medical Society on April 12, 1910, the following officers were elected: President, Dr. H. V. Bailey, Pekin; vice-president, Dr. H. A. Zinzer, Washington; secretary-treasurer, Dr. F. C. Gale, Pekin.

VERMILION COUNTY.

The Vermilion County Medical Society met April 11, 1910. Dr. Benj. Gleeson called the house to order at 8:45 p. m. The minutes of the previous meeting were read and adopted without any alteration.

Dr. H. F. Dice of Ridgefarm read a very interesting paper on "Traumatic Neurosis from a Medicolegal Point of View." It was an excellent paper. The society was much interested. A number of cases received by the author demonstrated how these patients feign injury in order to extort money from those whom they hold responsible for the injury. The paper was well presented and was freely discussed by the following members: Dr. Cooley followed by Drs. Walton, Glidden and Williamson, and the discussion was closed by the author. Dr. C. H. Evans was to have presented the next paper, "Neurosis from a Medical Point of View," but as he was not present and had not sent in his paper, it was not called for. Owing to the late hour and the desire to give our guest, Dr. J. A. Egan, an opportunity to speak, Dr. E. E. Clark moved, and it was seconded, to defer the reading of his paper till a future period. The motion was amended by substituting the phrase, "till the next meeting" for the words "till a future period," was seconded and carried.

At this point Dr. J. A. Egan, secretary of the State Board of Health, and Dr. Wason, the head of the Bacteriological Laboratory at Springfield, were introduced.

Dr. Egan made quite an interesting and spirited talk. He said that he and Dr. Wason were here for the purpose of arranging the establishment of a temporary laboratory during the state meeting, May 17, 18 and 19, this year. He said the purpose of the laboratory is to show us what they have done and are

doing at Springfield for the state of Illinois. He explained some of the duties of the State Secretary, and methods of conducting the state license examinations.

It was moved, seconded and carried to adjourn. Members present: Drs. Taylor, Becker, Williamson, Kingsley, Clements, Dice, Glidden, Hooker, Fisher, Clinch, Poole, M. Downs, Babcock, Clark, Dale, Wilkinson, Hatfield, Walton, Cooley, Steeley, F. N. Cloyd, R. N. Cloyd, Crist, Baldwin, Baumgart, Chaffee, Joseph Fairhall, Cochran, S. W. Jones, McIntosh, Solomon Jones, Gleeson, J. A. Egan and Wason, guests, of Springfield (36 in all).

SOLOMON JONES, Secretary.

WHITESIDE COUNTY.

The Whiteside County Medical Society met at Sterling, Feb. 9, 1910, being called to order by the president, Dr. Frank Broderick. After a brief opening session the society adjourned and enjoyed an hour in informal discussion during lunch. Upon reconvening a motion to continue the delegate question until next meeting was passed.

Dr. Frederick Tice of Chicago then read a very able paper on the "Treatment of Croupous Pneumonia." This paper was much appreciated by the members of the society in that the doctor's outline of his treatment was more concise and definite than is usually found in so difficult a subject.

In discussion Dr. Beard commended Dr. Tice's paper. Dr. Allen stated that in tympanitis he used emulsion asophetida by colonic flushing. Dr. Tice formerly used asophetida but now used normal salt solution by interrupted method 4 to 6 oz. every 6 hours preceded by alum injection.

Dr. F. J. Keefer cited case of a child seemingly *in extremis* in which colonic flushing in two hours reduced the rapidity of respirations one-half. Dr. Wahl did not agree that three days should not elapse before instituting medication for stimulation. Dr. Tice correcting Dr. Wahl stated that he did not say general medication but medication for stimulation. Dr. T. Allen of Rock Falls read a paper on "Colonic Atony." This was one of the most able papers ever read before the society and showed how a busy general practitioner by an extra effort when thoroughly interested in his work can take a series of similar cases and by systematic scientific treatment and observation arrive at certain conclusions and obtain results. In his association with the late Dr. Byron Robinson he stated that this was the doctor's main method of handling female cases and that 47 per cent. of those who came up for operation escaped. His own series of 100 cases of uncomplicated atony of the colon, gave recoveries, 84 per cent.; partial recoveries, 9 per cent., which means returning to treatment at times; failures 6 per cent., due possibly to changes in the musculature.

Dr. Tice:—The subject of the toxemias is an interesting one and to intestinal intoxication can often be traced headaches, various nervous conditions, enlarged livers, etc. Especially is this the case among the desk and sedentary workers of the cities. Another cause of these conditions is lack of public conveniences.

Dr. Beard:—A motion to incorporate in the by-laws an amendment to the effect that for a member of the county society to be in good standing he must have attended at least two meetings of the society within the fiscal year. After a general discussion motion was carried and secretary instructed to send copy to each member of society.

Drs. Allen and Parker endorse an existing by-law and ask that it be enforced, requiring that papers which are to be read before the society be sent to the secretary at least two weeks before meetings. A discussion of the county fee bill followed. Dr. Beard made a motion that the mimeograph copies of fee bill as presented by the committee be made and sent to each physician in the county for their correction. Carried. Dr. Frederick Tice of Chicago, on motion of Dr. Broderick, was made an honorary member of the Whiteside County Medical Society.

The following members were present: Drs. Smith, Anthony, J. F. Keefer, J. R. Keefer, Beard, Parker, Perry, Broderick of Sterling, Drs. Horner and Wahl of Tampico, Drs. Fitzgerald, Maurits and Sullivan of Morrison, Drs. Allen and Dow of Rock Falls.

E. P. SULLIVAN, Secretary.

WILL COUNTY.

The annual meeting of the Will County Medical Society was held at Hobbs' Cafe, Joliet, Tuesday evening, Dec. 14, 1909. After a 6 o'clock dinner, Dr. Fenton B. Turck of Chicago spoke on "The Diagnosis and Treatment of Diseases of the Stomach," and Drs. A. E. Halstead of Chicago spoke on "Surgical Diseases of the Stomach." After the discussion of these papers the officers for 1910 were elected as follows: President, Dr. Philip Le Sage; vice-president, Dr. Aloysius J. Lennon; secretary-treasurer, Dr. Marion K. Bowles; member board of censors, Dr. F. W. Ruben; delegate, Dr. Watson H. Curtis; alternate, Dr. D. W. Jump; member medicolegal committee, Dr. Wm. Dougall; member auxiliary legislative committee, Dr. Wm. M. Richards.

Adjourned.

MARION K. BOWLES, Secretary.

TREATMENT OF COMPOUND FRACTURES.

W. W. WILLIAMS, M.D., QUINCY, ILL.

(ABSTRACT.)

The modern aseptic treatment must vary according to the nature of the wound and the manner in which it was inflicted. As a general rule, it may be stated, the first dressing decides the fate of the patient and determines the process of wound healing. The treatment of the wound is of far greater consequence than that of the fracture itself; more especially during the first two weeks. A combination of most thorough aseptic treatment of the wound, with immediate and perfect reduction of the fracture, followed by fixation of the fractured limb by some kind of plastic splint, yields the best results.

Whenever there is any prospect of obtaining primary healing of the wound, the attempt should be most faithfully made. The keynote is cleanliness. If asepsis can be secured, or at least if sepsis can be reduced to the point at which any remaining infection can be dealt with by the tissues, a compound fracture will run the same course as a simple one. It is in these cases, perhaps more than in any other class of wounds, that the indiscriminate use of chemical antiseptics may do harm. If such chemicals avail little when used for the surrounding skin, they can, at least, do no harm, but the case is very different with the deeper tissues. Organisms which are entangled in the tissues cannot be reached and killed by any chemical solution which will not at the same time kill the far more delicate protoplasm of the tissue cells and phagocytes. Such destruction of the tissues produces a material which forms a favorable nidus for the development of the organisms. On the other hand, these tissue cells, if uninjured, are capable of dealing successfully with a certain number of organisms, and they should be given the opportunity of so doing.

Immediate amputation is indicated in severe crushes, with extensive comminution of bone and laceration of soft parts, extensive involvement of neighboring joint, and obliteration of the arterial supply. The age and general condition of the patient are also to be considered. In the young and vigorous an attempt may often be made to save a limb, which in the old, the alcoholic, and the subjects of visceral disease would require primary amputation.

The following treatment is indicated. In the less severe cases in which the wound has been caused by the projection of the bone through the skin. Operation: The patient should be anesthetized as soon as possible after the accident. A preliminary cleansing should first be undertaken, then cover over the actual wound with a piece of gauze, shave a wide area of skin and cleanse with ether,

soap and a nail brush. The wound itself must be well washed with ether, soap and an abundance of hot water. In cases where the bone is projecting through the skin, we may have to enlarge the wound in order to effect its replacement. It is seldom necessary or advisable to remove any portion of it. The bruised and torn skin edge must now be cut away with a scalpel, leaving a fresh, clean margin to the wound, which is next washed with a hot saline solution. Remove any actually separated pieces of bone, and cut away any badly bruised or lacerated pieces of soft tissue. The venous oozing is usually controlled by hot saline solution. If this fails, the wound must be plugged with sterile gauze. Wherever it is possible suture the wound without drainage, but it is often wise to put in the sutures some distance apart so that any exudation can escape between them. A large dressing of sterilized gauze and wool is applied. The splint employed should be of such a kind that the wound can be readily inspected with as little disturbance as possible. If in three or four days the general and local conditions indicate that the fracture is running an aseptic course, some other form of splint may be substituted. But if suppuration occurs, the patient is exposed to the dangers, both local and constitutional, attendant upon infective osteomyelitis. Any degree of acuteness of the infective process may be met with, depending on the nature and virulence of the organisms present and the constitutional condition of the patient.

Three main classes of suppurating compound fractures can be recognized. 1. Those in which the infection is mild, with little constitutional disturbance and slight local signs of inflammation. In these cases it is best to open up the wound, apply hot fomentations for a few days and then, immobilizing the fracture on some splint which allows ready access to the wound, await the separation of the small sequestra that may be expected to result. 2. Those with severe constitutional symptoms in which the infection spreads beneath the periosteum or up the medullary canal, causing widespread cellulitis or infecting a neighboring joint. In such cases free incision with drainage and bath treatment, where practicable, may yet save the limb. But if, in spite of all such measures, the fever continues and the patient is losing ground, amputation must be performed. This operation is rendered imperative if symptoms of pyemia begin to manifest themselves. 3. Cases in which some specific organism has invaded the wound. Such cases require, as a rule, immediate amputation. These are usually emphysematous, gangrene, and tetanus.

FIBROCYSTIC TUMORS IN CHILDREN.

(Case Report.)

L. Brannon, M.D., Joliet.

The rarity of cystic tumors in children and the gravity of the removal of complicated ones, prompts me to mention a case referred to me by the Drs. Allison of Essex, Ill.

Ruth R., aged 9 years, of delicate constitution and impaired nervous system, during the last two years received two hard blows upon the abdomen, one by falling on a plank, and another by being struck with a ball. However, she attended school and appeared to be in fair health until about a month ago, when after eating heartily of grapes, she had obstruction of the bowels.

She arrived, after having ridden thirty miles, at St. Joseph's Hospital at 10 o'clock. She was unaware that an operation was to be performed, until about 1 o'clock. When being so informed, she insisted upon its being made immediately, which was done. After the abdomen was opened, the incisions were lengthened to such an extent that all parts of the abdominal and pelvic cavities could be easily reached, that the work might be done quickly, for the tumor filled the whole space.

The omentum was all adherent and several loops of the intestines and the appendix were deeply imbedded in the tumor. The omentum was cut off and the

bleeding points ligated, and the cyst emptied with a trocar. The intestines were carefully removed from the tumor, as well as the appendix, for its enlarged and lengthened condition gave it the appearance of one. After the tumor was removed and the injured walls of the intestines were repaired with Lembert sutures, the abdomen was rapidly closed, for the shock was severe. When placed in bed she was pulseless and breathing had about ceased.

Salt solution, which had been given subcutaneously, during the latter part of the operation, was now given intravenously.

In addition, artificial respiration was resorted to, adrenalin chlorid, strychnin and nitroglycerin were given hypodermatically. She rallied promptly and made an uneventful recovery. Within a few weeks she reentered school and is now in robust health.

MALARIAL CACHEXIA AND ANEMIA SIMULATING PARENCHYMATOUS NEPHRITIS.

(Case Report.)

B. G. R. Williams, M.D., Paris, Ill.

The case which I am about to describe serves as a very good instance where unusual patience was necessary not only for a rigidly exact diagnosis but for a fairly satisfactory therapeutic result. It shows also what a small thing may put the physician on the right track.

Mrs. S., aged 38 years, American, housewife, called me to her home, Sept. 16, 1909, for "weakened health." She said that for the past three months she had noted a loss of weight, breathlessness, backache, headache and coldness of feet. She stated that at times her eyelids and ankles were a bit puffy. Neither family or sexual histories offered any points of interest. Had had childrens' diseases, typhoid fever and abscess of gall-bladder but could not recall any other previous affection. No bad habits except that she drank strong coffee at every meal. She was unable to name a definite date for the beginning of the present trouble. As to the cause she was inclined to attribute this to overwork and exposure. Onset was very gradual. She first noted the languor, explaining it as an inability to accomplish as much in the same time as hitherto. She had had well days but had steadily grown worse.

She had lost about 20 pounds. She coughed some at times but failed to raise anything. She claimed that several weeks before she had expectorated blood. She had been bothered considerably with palpitation of the heart. Though appetite was poor there was no nausea. She claimed that stools appeared normal though urine was scanty. Complained of pain throughout abdomen and a general "soreness" of bowels, no night sweats; no vertigo. She was troubled with a constant headache, insomnia, coldness of the feet and tinnitus aurium.

Status Præsens.—Temperature 99.1 in evening; pulse, frequently 92, fast, gaseous; radials not sclerotic; respiration 19, not labored. Medium height and build, slender, symmetrical; muscles soft; panniculus thick; bones light; most of lymph glands palpable. Reflexes exaggerated. Patient lies in bed too weak to rise but does not grow dizzy when she attempts to stand. Speech normal.

Skin, pale, waxy, no cyanosis, jcterus or eruption; mucous membranes pale, skin cold, some pitting over ankles, no scars except linea albicantes. Head including eyes negative. Neck thyroid somewhat enlarged and firm (no symptoms of hyperthyrea). Thorax, negative except for some crepitant râles over back. Vesicular breathing. Heart, negative. On September 23 a functional murmur was heard. Abdomen, tenderness at all points but more marked at certain points the position of which varied with each examination and were influenced somewhat by suggestion. Spleen not palpated (September 18).

I then turned my attention to the urinary tract. Patient complained of passing small amounts of urine often. She used the urinal often during the night but attributed this to her insomnia. Urinalysis: Proteins and proteoses in large

amounts, microscopic examination showed cells from uriniferous tubules, pus cells, and erythrocytes. Few blood casts but no epithelial nor fatty casts. Specific gravity 1,032 on September 18. Other tests negative. Sputum examination negative.

At this point I initiated a rigid milk diet, administered iron and excluded salt from the food until a marked decrease of chlorids in the urine was noted. Instead of a favorable reaction, however, the patient steadily declined, in one instance sleeping about thirty hours without waking. Routine blood examination showed a marked secondary anemia, which I assumed to be toxic in origin.

On September 26 patient remarked that she had noticed that she felt worse every third or fourth day. I had noted almost simultaneously that she ran a temperature when she had these periods of feeling worse. An examination of the spleen at this time showed a slight enlargement. Patient recalled that about twelve years previously she had had chills and was green but that these had disappeared on taking large doses of quinin.

At this point I began searching for the *plasmodium* but failed to find any trace until I had made many examinations. But in one smear stained with Wright's blood stain I found some small hyalin bodies in some of the erythocytes. Neither was there any pigment nor were there any sexual forms found. The type of the plasmodium could not be determined. Blood examination showed: Flow free; color, light; hemoglobin, 70 per cent.; erythrocytes, 3,841,000; leucocytes, 12,223; coagulation time, four minutes; other special tests negative or not attempted.

Classification of Red Cells.—Present: Normal erythrocytes, microcytes, undersized cells, poikilocytes, shadows, endoglobular degeneration, enlarged and diminished delta. Absent: Oversized cells, macrocytes, normoblasts, microblasts, megaloblasts, poikiloblasts, degenerating normoblasts, karyorrhexis, karyokinesis and polychromophilia.

Differential Count (in percentage).—Large lymphocytes, 18; small lymphocytes, 3; mononuclears, 2; transitional, 1; polymorphonuclear eosinophil, 3; polymorphonuclear neutrophil, 72; polymorphonuclear basophil, 1; mast cells and unclassified, 0; myelocytes, 0; myelocytes eosinophil, 0; micro-organisms, plasmodium malariæ.

A diagnosis of malarial cachexia and anemia was made at once. I administered ten grains of quinin muriate on the evening of September 18 and doubled this dose the next day which was her expected off day. Then I continued with 5 grains of quinin daily and gave her 5 drops of Fowler's solution after each meal for three days. On September 20 there was a marked improvement, and three days later I dismissed the case, receiving favorable reports from time to time for several days. Abdominal tenderness had disappeared, urine was normal. The spleen remained large, seeming to increase in size after the symptoms disappeared. Blood picture improved slightly in three days after quinin was started. No more endoglobular bodies were found. Small doses of quinin, iron and arsenic were given for several days.

It might be noted that although there was most probably a paludal hepatitis at no time was there any bile to be found in the urine. The right hypochondriac region showed an almost continual tenderness and the scleræ were of a greenish cast.

In conclusion I believe the case to be a good illustration of how a very small point may change the diagnosis, prognosis and treatment of a case upon which another disposition had previously been made.

NEWS OF THE STATE

PERSONAL.

Dr. Charles Adams, Chicago, sailed for Europe April 9.

Dr. Frank W. Lynch, Chicago, has returned after four months abroad.

Dr. and Mrs. John A. Koch, Quincy, sailed April 23 for a six months' trip abroad.

Dr. Julius H. Hess, Chicago, accompanied by his family, sailed for Europe April 12.

Dr. Daniel D. Brengle, Winchester, one of the oldest physicians in the state, is critically ill.

Dr. and Mrs. Franklin H. Martin, Chicago, have returned from Egypt and the Orient.

Dr. Paul E. N. Greeley has commenced the erection of a private hospital in Waterman.

Dr. Charles E. Crawford, city health officer of Rockford, has returned from a trip to California.

Dr. Samuel N. Wylie, Paxton, has returned from Palm Beach, Fla., greatly improved in health.

Dr. S. C. Stanton, Chicago, had his sixth attack of diphtheria last month, fortunately a light case.

Dr. John M. Gulick, Manteno, was operated on at Mercy Hospital, Chicago, recently, for appendicitis.

Dr. Edward A. Foley, Kankakee, has been appointed assistant superintendent of the Anna State Hospital.

Dr. Glenn W. Putnam has succeeded Dr. I. W. Howard as surgeon of the Burlington Relief Association, Aurora.

Dr. Jacob Frank and wife, of Chicago, have returned from an extended trip through Egypt, Palestine, Syria and Turkey.

Dr. Isadore S. Trostler, Chicago, was operated on in St. Luke's Hospital, Chicago, April 2, for a fracture of the right patella.

Dr. James A. Cline, Joliet, who recently underwent an operation for appendicitis at St. Joseph Hospital, is reported to be convalescent.

Dr. George P. Powell, Dixon, has been appointed a member of the board of pension examining surgeons, vice Dr. David H. Law, deceased.

Dr. Eugen Cohn, assistant superintendent of the Anna State Hospital, has been appointed assistant superintendent of the Peoria State Hospital.

Dr. Howard T. Ricketts, assistant professor of pathology in the University of Chicago, has resigned to accept the professorship of pathology in the University of Pennsylvania.

Dr. E. Fletcher Ingals, Chicago, has been elected an honorary member of the Vienna Laryngologic Society and corresponding member of the Royal Society of Physicians, Budapest.

Dr. Harry M. Hayes has returned to his home in Peoria after a year's study of surgery in England, Germany and Vienna. Dr. Hayes is located at the New National Hotel and limits his work to surgical practice.

Health Commissioner William A. Evans, Chicago, Dr. William K. Murray and Dr. Egil T. Olson, have been appointed a board to pass on the medical and physical defects of 370 members of the police department who have attained the age of 50 years and have been in the police service twenty years.

Dr. Hugh A. Cuthbertson, 6242 Woodlawn avenue, and his sister, Miss Agnes Cuthbertson, and Dr. James T. Campbell, 34 Washington street, and his mother, all of Chicago, sailed from Boston, April 2, via the Mediterranean route, for Naples, Vienna and London, to be gone three months.

NEWS ITEMS.

—The Illinois State Association for Graduate Nurses is endeavoring to raise $10,000 for the erection of a building to be used for the care of nurses attacked by tuberculosis.

—At the recent local election the municipal tuberculosis sanatorium tax levy was carried in Rock Island. This is the first city outside of Chicago to take advantage of the Glackin sanatorium tuberculosis law.

—How would you like to consign a poetic friend to a "haven full of muses" and have a compositor switch him to a "harem full of nurses?" It is to laugh, but perhaps the friend enjoyed the society better and had no kick coming.

—At a meeting, on March 23, of the hospital commission consisting of representatives of Cook County and Chicago it was decided that the county hospital is to be retained in charge of the county board. No more contagious diseases are to be treated in the institution and the city will build a hospital for contagious diseases.

—Mrs. Helen Morris, wife of Edward Morris, Chicago, has deeded the site of the Chicago Home for Convalescent Women and Children,

valued at $10,000, to that institution. The gift makes possible the addition of a children's ward. The building at present on the site will be remodeled and a new four-story structure will be erected.

—It is reported that Dr. L. C. H. E. Zeigler, Chicago, has been awarded $100,000 by the Supreme Court on his claim against the McVicker estate for medical attendance on the late Mrs. McVicker. The Appellate Court decided against the doctor, holding that the contract was against public policy, as noted in the September JOURNAL.

—At the twentieth annual reunion and dinner of the class of 1890 of Rush Medical College Drs. E. Fletcher Ingals and Arthur D. Bevan delivered addresses; Dr. T. E. Wilcox was elected president; Dr. Henry D. Anderson, vice-president; Dr. Emanuel Friend, secretary, and Dr. Thomas H. Culhane, Rockford, necrologist.

—The board of administration has appointed Dr. Sidney D. Wilgus, of New York, superintendent of the Northern Illinois Insane Hospital at Elgin, effective May 1. Dr. F. H. Jenks has been acting superintendent since the resignation of Dr. Podstata. Dr. Wilgus is chairman of the New York commission in lunacy and during his five years' incumbency 1,200 aliens have been deported from the state hospitals for the insane. The board has also developed plans for returning non-residents to their homes in other states, and at the present time is sending out of the state annually 500 persons who otherwise would be public charges.

—Those of our readers who are interested in the various forms of physiologic therapy (including hydrotherapy, electrotherapy, massage, hyperemia, etc.) will be glad to know that it is proposed shortly to inaugurate a new journal devoted solely to the delineation of the progress made in these lines of therapeutic endeavor. *The American Journal of Physiologic Therapeutics* will be published bi-monthly and the subscription price will be $1.00 a year. The names and addresses of all interested physicians should be sent in, and those desirous of subscribing at once may enclose their remittance when writing. It is to be hoped that a widespread interest may be aroused in this matter. Write *now*, while this is fresh in your mind, to *The American Journal of Physiologic Therapeutics*, 72 Madison street, Chicago.

—The recent adoption by the International Harvester Company and the proposed plan of the United States Steel Corporation for industrial insurance will be noted with peculiar interest by those who read the elaborate articles on workmen's compensation contributed to the JOURNAL last year by Dr. W. H. Allport. The adopted plans will aid the state commission in framing a law for general application. It is estimated that under the plan of insurance *against* damage claims the injured employees have received only 45 per cent. of the sums paid by the employers to the insurance companies. Under the new régime payments will be made promptly and in accordance with a definite arrangement in case of accident or death of an employee. Whether the employee is as fully protected under the voluntary plan of the corporations as public

policy demands is the proper task of the state commission to determine. Those corporations who have taken the step in advance of statutory requirements have shown an admirable, enlightened self interest.

PUBLIC HEALTH.

—A new general hospital for La Salle and Peru was the subject for discussion at a recent meeting of the Twin City Medical Association with the Peru Hospital Association.

—A case of smallpox in Peoria not reported to the health officers is said to have been the origin of several cases, with one death. The local officials reported the circumstances to the state board of health.

—The Chicago Hospital Day Association has decided to set aside one-third of the money collected on Hospital Day, May 16, to the fund for the establishment of a contagious disease hospital, the need for which is urgent.

—Fire caused by lightning partially destroyed the store building of the Bartonville State Hospital early in the morning of April 4. The 150 patients who were asleep on the third floor of the building were removed without casualty by the attendants.

—County Clerk J. T. Zimmerman's (of Shelbyville) birth report for the past quarter shows the total number of births for the first three months of 1910, 184. Males, 98; females, 86; white, 183; colored, 1. Number born in January, 52; in February, 52; in March, 80.

—The board of supervisors of La Salle County has recommended remodeling the present isolation hospital so that the building may be used as a sanatorium for tuberculosis. A large porch is to be constructed around the building and provision made for open-air treatment.

—Dr. Simon Baruch, of New York, attended the opening of the new public bath in Chicago named in his honor, April 21. Dr. Baruch is credited with being the founder of the public bath propaganda in the United States. He is an advocate of the shower bath rather than the tub or pool bath.

—Dr. Henry B. Hemenway in a public lecture said: "Illinois' mortuary statistics are inefficient and inaccurate. They are not accepted by the United States government. Only about 80 per cent. of the deaths are reported. The state authorities are not up to standard and give little aid to the city departments."

—The new Emanuel Mandel West Side Memorial Dispensary, Maxwell and Waller streets, Chicago, was formally dedicated, April 24, by officials of the Jewish Aid Society, the Associated Jewish Charities and the health department. The building is the third to be erected by donations from Mrs. E. Mandel.

—Drs. Walter S. Haines and W. H. Allport, Chicago, have been appointed by Governor Deneen members of the commission to investigate occupational diseases in factories and stores succeeding Drs. Alice Hamilton, who is assigned to expert work with the commission, and Arnold C. Klebs, who resigned to study abroad two years.

—As a result of the annual competitive examination forty interns were accepted for Cook County Hospital, each to serve for eighteen months. Of the successful candidates twenty-four were graduates of Rush Medical College and eight each of Northwestern University Medical School and the College of Physicians and Surgeons.

—At a meeting of the Sangamon County Medical Society, April 11, a milk commission composed of the following Springfield physicians was appointed: Drs. Hugh T. Morrison, Samuel E. Munson, Harry C. Blankmeyer, Emil L. Bernard and George T. Palmer. This commission will go into all the facts concerning the establishment of a system of certified milk for Springfield.

—County Clerk Haas is cooperating with Health Commissioner Evans of Chicago by furnishing daily lists of mothers of babies registered, with the nativity of the mother. The department mails each mother a copy of the circular on "Hot Weather Care of Young Infants" as written by the late Dr. Frank W. Reilly. Eight languages are represented in the circulars and more could be used to advantage.

—A free bed for nurses afflicted with tuberculosis has recently been established at the Edward Sanitarium at Naperville, a department of the Chicago Tuberculosis Institute, in recognition of the valuable service of the nurses of Chicago, who as members of the nurses' auxiliary committee of the institute took a leading part in the sale of Red Cross Christmas stamps. From the proceeds of this sale the money to support the bed has been appropriated.

—The first concerted movements by Chicago organizations to enforce the anti-spitting ordinance was started March 31, at a meeting attended by representatives of the police and health departments, men's and women's clubs, social settlements, united charities and the Chicago Tuberculosis Institute. The Chicago City Railway Company has announced that it will have new posters placed in all its cars warning against spitting and that transfers will have similar matter printed on their backs.

—The Chicago City Railway Company has contributed advertising space in all its cars for the propaganda against spitting and smoking, and also prints advice against spitting on the back of 600,000 transfers issued daily to its patrons. The Tuberculosis Institute, the Visiting Nurse Association and numerous women's clubs are aligned with the health department in the crusade. Public opinion is with the elevated railroad company that abolished smoking in its cars and the others may be compelled to get in line.

—The decision of the Supreme Court upholding the law prohibiting the employment of women in factories, laundries and other mechanical establishments more than ten hours a day is a most enlightened application of medical wisdom. In his argument before the court Mr. L. D. Brandies took a long shot of three pages of law to 600 pages of medical testimony, and won. The court cut some red tape when it announced: "It is known to all men, and of what we know as men we cannot profess to be ignorant as judges."

—Dr. George W. Webster, in a recent public lecture under the auspices of the Chicago Medical Society, on "Alcohol and Good Health," said that "the death rate from alcohol is as great as from tuberculosis, 140,000 a year. Physicians should teach the effects of its use on working efficiency and in regard to health, and in this way they could do more than the moral instruction and arguments of clergymen, temperance workers and reformers. We deserve condemnation as a profession when we sneer at the clergyman and the reformer in their efforts to stamp out this evil."

—The Logan Square Club, Chicago, gave a dance March 29 for the physicians and dentists who are members. The attendants were dressed as internes and nurses. Operations on the patients of a make-believe hospital were announced to begin at 9 p. m. and the ambulance was to call at 1 a. m. Each man was supplied with prescription blanks and was expected to prescribe for any alarming symptoms developed by their fair partners. Real pharmacists then filled the orders at a mimic drug store. For one of the novel figures of the cotillion each dancer had a miniature telephone. Suddenly a telephone rang calling all the doctors to the anteroom. Next the cry of a baby was heard. A moment later the doctors rushed back, each pushing a go-cart containing a miniature stork.

—It is estimated that 10,000,000 persons heard 70,000 sermons on tuberculosis preached April 24, under the auspices of the National Association for the Study and Prevention of Tuberculosis, from the pulpits of the country.

As far as the preachers followed the texts furnished by the Association and local health authorities much good should result from the diffusion of real knowledge of the disease. Many preachers devoted one or more sermons to the propaganda, in some cases providing themselves with charts or stereopticons to illustrate the talks.

In his sermon at the Fifth Avenue Baptist (Rockefeller) Church in New York City, Rev. Dr. Aked told how sunlight and fresh air were the best physicians.

"If I could only teach that," he said, "I should be sure to go down in history as a benefactor of mankind."

Bishop Samuel Fallows in his sermon at St. Paul's Reformed Episcopal Church contended that it was the work of the church to lead in movements such as the one against tuberculosis.

"Christianity to-day cannot be divorced from anything that bears upon the well-being of mankind," he said. "There is nothing pertaining to humanity that is foreign to it. No millennium can ever come until there are sound minds in sound bodies. Christian ministers must be in the forefront with enlightened physicians in the Christ-like effects to stamp out disease. They must see that

their own church structures are not the harboring places by ill ventilation, of health-destroying germs."

—A comparative statement of Chicago's mortality for the first three months of the year as compared with the same months of last year shows an increase of the death rate from 15 to 15.9 per 1,000. The principal increase was in deaths from pneumonia, 420, to a total of 2,046. Tuberculosis increased from 1,057 to 1,105. Typhoid decreased from 95 to 54. Scarlet fever decreased from 117 to 99. As the *Bulletin* of April 2 stated:

About the only cheerful thing in the mortality record of the first quarter of the current year is the very low death rate from typhoid fever, a reduction of 45 per cent. from the record of the corresponding period of last year, which up to this time was the lowest ever recorded in Chicago. Since the first of the year there have been only 54 deaths from this disease as against 95 in the same period of time last year. In January there was a saving of 1, in February a saving of 20 and in March a saving of 20. If we can hold the record for the next 9 months at the same figures that obtained for the last nine months of last year, no further savings will be necessary to give us a yearly rate of 9.9 per 100,000 of population, a rate considerably lower than the lowest ever recorded by any other large American city. Contrast this with the typhoid rate of 173.8 that obtained in this city in 1891 and you can better appreciate the progress that has been made in the last twenty years toward pushing typhoid fever to the vanishing point.

Formerly we had water-epidemics and more lately milk-epidemics of typhoid fever. The Drainage Channel and the intercepting sewer systems have eliminated the water-epidemics; pasteurization has undoubtedly done much in the last fifteen months towards elimination of milk-epidemics.

With the increasing safeguards now being thrown around our water supply and around our milk supply there is good reason to believe that typhoid fever will soon cease to menace the health and life of our citizens.

REMOVALS.

—Dr. William H. Wilder wishes to announce that after Wednesday, April 27th, 1910, he will occupy his new office in Suite 1417 Peoples Gas building, 150 Michigan Avenue, corner Adams Street, Chicago, Illinois.

Dr. B. C. Corbus wishes to announce the removal of his office, on May 1, to room 602 Reliance building, 100 State street, where he will continue to limit his practice to the treatment of diseases of the skin and genito-urinary system, including his Wassermann work. Telephone remains the same, Central 433. Office hours, 9:30 to 4:30.

IN THE HOSPITAL.

Dedicated to the Colonial Hospital, Geneva, Ill.

REV. ERNEST LEE THOMPSON.

And "now I lay me down to sleep,"
A sleep so strange, and queer,
That presently I cannot tell
If I'm somewhere else or here.

A voice above me says, "breathe deep,"
And I at once obey;
Then keep it up, as best I can,
Till I forget the way.

And now beyond all care and pain
On *ether* wings I float;
Just as within the sunbeams there
I've watched each tiny mote.

And now they treat me as they please,
I cannot make protest;
But those to whom I trust my life
Are doing what is best.

And now I'm waking out of sleep;
I open wide my eyes,
And for an instant everything
Fills me with deep surprise.

I see my friends and smile, and speak,
Then back to dreamland go,
Altho' I try with all my might
To talk with those I know.

And now I'm waking up again,
But, oh, I hurt inside;
I'm cut, and pulled, and torn, and sewed,
And gathered up and tied.

And now I lie flat on my back,
I roll my head and roar;
I'm pierced by *every* kind of pain,
A million aches, or more.

And now the pain is almost gone,
And I am robed in white,
Within a sweet and spotless bed
Just resting, day and night.

And now I beg, and beg for food;
I'd eat it, fresh or stale;
For days I've had just this alone—
A glass of Adam's ale.

And now they bring a cup of tea!
And then a bit of toast!
Soon follow spuds, and other things;
At last I get a roast.

And now I feel my strength return
Unto its old degree,
And I again take up the task
Appointed unto me.

But ere I leave this dear retreat
I'll breathe a fervent prayer
Upon the surgeons, nurses, friends,
Who stay for others' care.

Book Notices.

NUTRITION AND DIETETICS. A Manual for Students of Medicine, for Trained Nurses, and for Dietitians in Hospitals and Other Institutions. By Winfield S. Hall, Ph.D., M.D., Professor of Physiology, Northwestern University Medical School; Lecturer on Physiology and Dietetics in Mercy Hospital and Wesley Hospital, Chicago. Price, $2.00 net. D. Appleton & Co., 1910.

Dr. Hall's work is a concise text-book suitable for the general practitioner as well as under-graduates and nurses and covers the whole field of nutrition and dietetics. Professor Brennerman has contributed two valuable chapters on infant feeding in health and disease. It is the result of a long period of teaching and is practical in every regard. We believe that it fills a long-felt want and that it should have a wide circulation.

TEXT-BOOK ON THE PATHOGENIC BACTERIA. Sixth Edition, Revised. For students of Medicine and Physicians. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. Octavo 709 pages, fully illustrated, a number in colors. W. B. Saunders Company, Philadelphia and London, 1909. Cloth, $3.50 net.

Professor McFarland explains that his work is a text-book and not an encyclopedia. It contains a rather extensive bibliography but not a complete one. Through it the student is referred to the original writings upon the subjects treated, to writings that have become classic; that embrace complete bibliographies of the subjects treated, or that are useful because of ingenious experiments recorded, and to writings in which the recent advances of the subject are contained. The work has gone through six editions in fourteen years and has been placed in the hands of more than ten thousand readers. It is up-to-date in every regard, bringing out the new theories in regard to syphilis and other of the latest discovered germs of disease.

THE PRACTICE OF GYNECOLOGY. New (fourth) edition, thoroughly revised. A Text-Book on the Practice of Gynecology. For Practitioners and Students. By W. Easterly Ashton, M.D., LL.D., Professor of Gynecology in the Medico-Chirurgical College of Philadelphia. Octavo of 1099 pages, with 1058 original line drawings. W. B. Saunders Company, Philadelphia and London, 1909. Cloth, $6.50 net; half morocco, $8.00 net.

Dr. Ashton's fourth edition, dated September, 1909, continues to exemplify the aim set in the first edition that nothing was taken for granted in describing gynecologic diseases. Explicit directions are given as to what should be looked for in every case, so that the progress of the disease may be intelligently and easily followed. Usually the operation necessary for the relief of the disease is preceded by illustrations of the instruments necessary to perform the operation and the various steps are illustrated by drawings and engravings. Additions have been made on the treatment of cystitis and tuberculosis of the genital organs. Several changes have been made in the technique of abdominal and pelvic operations and the length of time the patient should remain in bed shortened. Practical directions have been added to the chapter on constipation, and altogether the book has been made as practical and helpful to the reader as it is possible for such a work to be.

OPHTHALMIC SURGERY. By Charles H. Beard, M.D., Surgeon to the Illinois Charitable Eye and Ear Infirmary. 674 pages, with 9 plates and 300 other illustrations. Cloth. Price, $5.00. P. Blakiston's Son & Co., Philadelphia, 1910.

The author of this admirable work has evidently accomplished his desire, expressed in the foreword of the book, to make it the pioneer American work devoted exclusively to the surgery of the eye. The book is very comprehensive and it seems that no surgical procedure of sufficient real or supposed merit to ever engage the attention of ophthalmologists has been omitted. Especial attention has been given to detailing those whose usefulness has been firmly established. American methods have, perhaps for the first time, been given the prominence which they deserve. Anatomical lines have been closely followed in the classification of the operations, thus producing an admirably simple and systematic arrangement. The book is impressive as being the practical work of a practical surgeon. This feature is especially noticeable in the enumerating of the accidents which occasionally follow the more serious operations, and for the relief or explanation of which ordinary text-books may be searched in vain. For example, thirty-five accidents following the extraction of cataract are explained and full instruction given for their avoidance and treatment. The author's skill as an artist has added greatly to the clear presentation of the subjects by giving intelligent emphasis to their salient features. The plates on instruments are exquisite. The chapter devoted to instruments and their management is unique and of interest to both tyro and master. To the former for the information it gives of the qualities of the various instruments that experience has taught to be good or bad, and to the latter, from a historical standpoint, in following the development of the various patterns in the hands of the men who have made ophthalmic surgery. The fidelity with which these descriptions are made might constitute a criticism of this chapter. Here as in other parts of the book American products are given equal prominence with those of foreign manufacture. The chapter on Para-Operative Technic is replete with information on those subjects wherein eye surgery differs from general surgery, as in the preparation of the patient, and the supplies, arrangement, and care of operating room, and all that concerns the after-treatment.

In keeping with the interest now manifested in extirpation of the lacrimal sac, this operation is described with especial care, and illustrated with original drawings. Another reply to modern demands is shown in the unusually large amount of space (42 pages) devoted to the removal of foreign bodies, especially steel, from the interior of the eye. The rapidly multiplying use of steel and machinery, with their accompanying eye injuries, has certainly made this an important part of the eye surgeon's work. It is a truly comprehensive book that will be welcomed by those specializing on the eye.